ASCO® 5100 Series, Catalog 5150
Connectivity Module
For use with Automatic Transfer Switches, Power Manager, & Digital Power Meter

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EMERSON. Network Power

Who Should Use this Installation Manual

This manual for the **Connectivity Module** should be used to assist individuals who will:

- install the Connectivity Module (mount and wire)
- configure the Connectivity Module
- enter in information about your Automatic Transfer Switches (*7000 & 4000 Series, Series 300,* ASCO *940,962,436,434,447,448*)
- use Ethernet access to monitor Connectivity Module (connected devices)

Prerequisites

A working knowledge of *Windows XP* ® and *Windows Internet Explorer 6.0* or higher (with Microsoft Virtual Machine or the latest version of the Java Runtime Environment loaded) is necessary to configure the Connectivity Module.

Important information that you will need

To properly set up the software, you will need the nameplate data and other information from all your Automatic Transfer Switches including:

- ATS Name (your designation for the ATS)
- ATS Location (where the ATS is located in the building)
- Voltage Rating, Ampere Rating, and number of Poles for each ATS
- Catalog No. and Serial No. of each ATS
- Type of ATS (ATS or ATS/BP [ATS with bypass-isolation switch])
- Device Address (set in each ATS, Power Manager , or Digital Power Meter)

Product	Manuals that you may need
7000 & 4000 Series ATS & Group 5 Controller	381333-126 & appropriate ATS manual
Series 300, ASCO 940, 962, 436, 434, 447, 448 ATS	appropriate ATS manual
Power Manager Xp, Catalog 5220D, 5220T	381333-199
Digital Power Meter, Catalog 5210	381333-368
Serial Module, Catalog 5110 (Acc. 72A)	381333-240
ATS Remote Annunciator, Catalog 5310 (1 channel)	381333-316 & 381333-317
ATS Remote Annunciator, Catalog 5350 (8 channel)	381333-314 & 381333-315

ATS Remote Annunciator kits 8 channel K871966-004, 1 channel K871966-005

Kits include: ATS Remote Annunciator (RA), Connectivity Module (CM), power supply, mounting hardware, connecting cable
The CM can be configured to provide ATS data to ATS Remote Annunciators (RA) over Ethernet either on encryption disabled or enabled mode. Details on how to configure all required parameters for the two modes are in the RA manuals listed above.
Encryption disabled mode is the default operation mode for both the CM and the RA. In this mode, the TCP port and protocol assigned must be the same for both devices.
Encryption enabled mode is when both the CM and RA are configured for AES 128-bit encryption/decryption communication. In this mode, the AES mode and AES port settings in the CM are enabled and assigned a value respectively. Note that the AES port value must be different from the TCP port value (see screen on page 2-1).
Likewise, in the RA, encryption must be enabled and the TCP port is assigned with the same value as the AES port of the CM. Note that the encryption works only on RAs with software version -003 or higher (refer to Configuration, Annunciator screen).

Tip ⇨ Communication Address form is included at the back to help you fill in needed information on your Connectivity Modules, ATSs, Power Managers, Digital Power Meters.

The **Connectivity Module** provides Ethernet-access that allows users to view data from ASCO automatic transfer switches, Power Managers, and Digital Power Meters. All users must follow these precautions:

⚠ DANGER **To avoid possible shock, burns, or death, deenergize all electrical sources to the ATS before installing the Connectivity Module.**

NOTICE Be sure that *Users* to whom you give access are those persons that you want to view information about the electrical system.

Windows and *Internet Explorer* are registered trademarks of Microsoft Corporation.

Overview

The **Connectivity Module** brings together several different serial devices that communicate at different baud rates and with different protocols to a common Ethernet media. It can communicate with up to eight clients, such as Web applications (web pages), Vpi, or third-party *Modbus* ® devices simultaneously over Ethernet media.

Specifications

Power Requirements: 24 V dc nominal (8 – 28 V dc)
1.5 Watt, UL Class 2 power supply, if needed.
Mounting: 35 mm DIN rail
Dimensions: 3.5" H, 2.8" W, 2.9" D (8.9 cm, 7.1 cm, 7.4 cm)

Field Communication Cable Requirements:
Ethernet: Belden 7882A or equiv. UTP CAT 5 with RJ45 connectors (untwisted pair or higher)
Serial: Belden 9842, 9829, 89729, 82729 or Apha 6202C, 6222C, 58902. UL Listed, stranded, twisted pairs, over-all foil shield with stranded drain wire

J1, J2 TTL Port Connectors: Two built-in TTL ports (DB9 pin male) for ATS/PM connectivity

J3 Ethernet Port Connector :
One built-in 10 Base T (RJ45) 10 Mbps Ethernet port

J4 Serial RS-485 Port:
One 5-pin terminal block header with a socket block (J4) designed to be daisy chained for up to 32 devices.
Terminal 1 – RX+ Terminal 4 – TX-
Terminal 2 – RX- Terminal 5 – Com
Terminal 3 – TX+

Ambient Temperature:
Operating 32 to 140° F (0 to 60° C)
Storage - -40 to 185° F (-40 to 85° C)

Configuration Parameters: The parameters that are required to make an Ethernet connection are:
IP Address 169.254.1.1
Subnet Mask 255.255.0.0
Gateway0.0.0.0
TCP Port No. 10001
The TCP port is used for passing the data to the applications and is configurable for user specific requirement.
Baud Rates 19200 (default) or 9600
Flow Control No Flow Control (default)
Interface Mode TTL/RS485 – 4 wires (default)
Reply Timeout 200 milliseconds (default)

Protocol Support: The following protocols are supported:
Serial Protocol: ASCO I, II, and Modbus
Transport Protocol: TCP, UDP
Application Protocol: HTTP, Telnet, Modbus/TCP
AES Encryption enable or disable

Installation Overview

1. Determine the kind of network to use to connect the various devices to the Connectivity Module.
2. If a RS485 network will be used, do not install the Connectivity Module until the DIP switches are checked and set on the bottom of the unit. See below.
3. Refer to the outline & mounting drawing (page iv) and wiring diagrams (pages v, vi).
4. Select the appropriate installation (pages 1-1, 1-2) that corresponds to the product to be connected.
5. Establish and test communications (page 1-2). Refer to Status LEDs (page vii).
6. View and change configuration pages (page 1-3).

Check the DIP Switch Settings for RS485

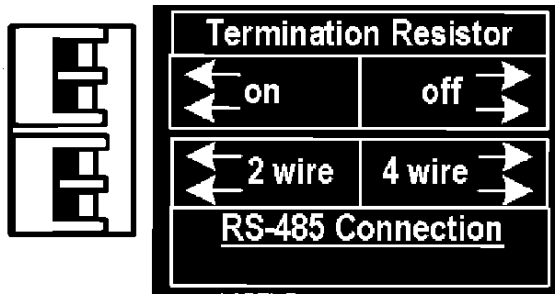
For RS485 networks only, before installing the Connectivity Module check the position of the DIP switch actuators on the bottom of the unit. The upper two actuators turn on a built-in termination resistor, if needed. The lower two actuators select either a 2-wire or 4-wire RS485 network. See the figure below.

Termination Resistor, upper two actuators

On a daisy chained RS485 network the Connectivity Module termination resistor must be ON. Likewise only the farthest device from the Connectivity Module must have the termination resistor ON. All other devices must be OFF. The DIP switch upper two actuators control the built-in termination resistor:
ON – move to left. OFF – move to right.

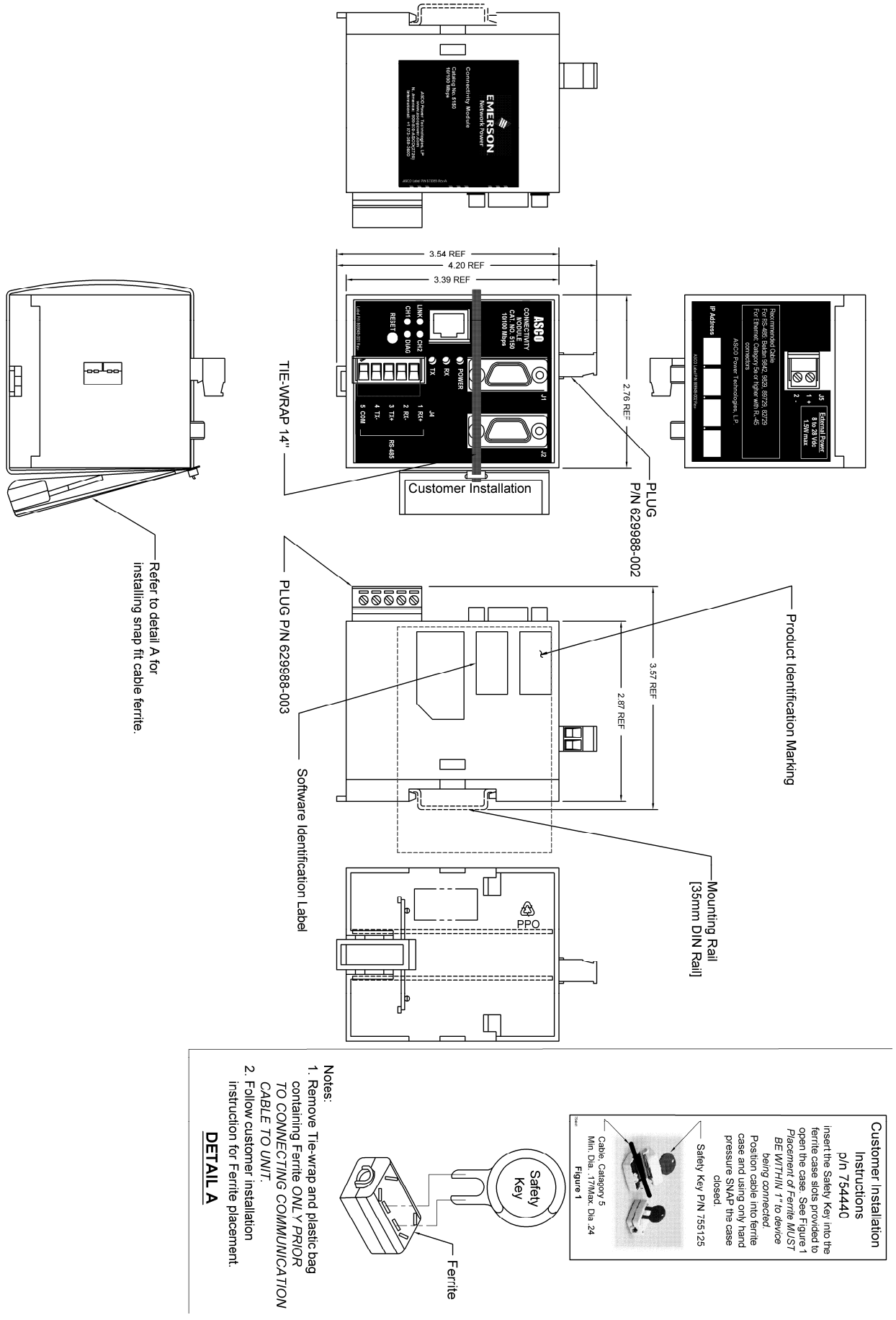
2-Wire or 4-Wire network, lower two actuators

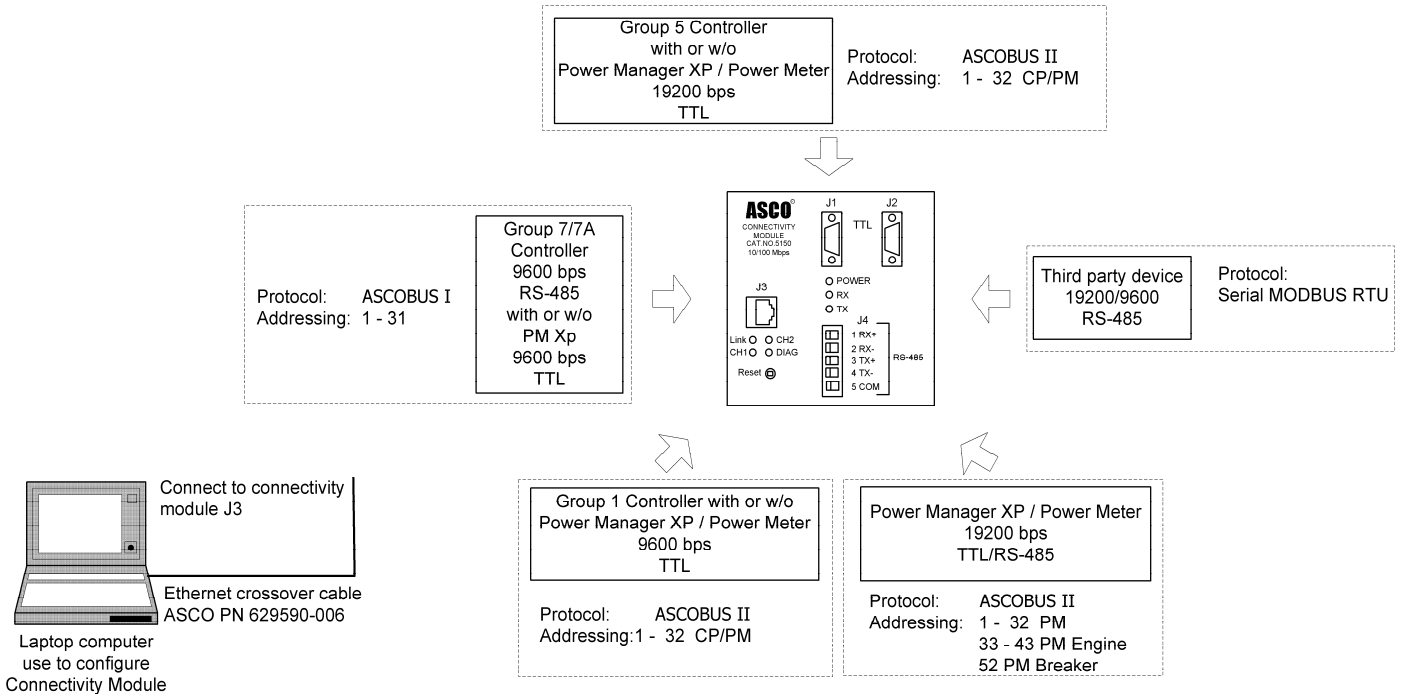
If a 2-wire RS485 network is to be attached to the Connectivity Module, move the lower two actuators to the left. If a 4-wire RS485 network is used, move these actuators to the right.



DIP Switch on bottom of unit

Modbus is a registered trademark of Gould Inc.


EMERSON
Network Power
Connectivity Module
Catalog No. 5150
10/100 Mbps
ASCO Power Technologies, LP
Florham Park, NJ 07932-1591
Tel: 1-973-966-2000
Fax: 1-973-360-8525
ASCO Label P/N 613085 Rev A
ASCO
CONNECTIVITY MODULE
CAT. NO. 5150
10/100 Mbps
LINK
CH2
CH1
DIAG
RESET
RX
TX
POWER
J1
J2
J4
1 RX+
2 RX-
3 TX+
4 TX-
5 COM
RS-485
J5
External Power
8 to 28 Vdc
1.5W max.
1 +
2 -
Recommended Cable
For RS-485: Belden 9842, 9829, 88723, 82729
For Ethernet: Category 5e or Higher with RJ-45 connectors
ASCO Power Technologies, L.P.
IP Address
3.54 REF
4.20 REF
3.39 REF
2.76 REF
Customer Installation
PLUG
P/N 629988-002
TIE-WRAP 14"
Refer to detail A for
installing snap fit cable ferrite.
PLUG P/N 629988-003
Software Identification Label
Product Identification Marking
3.57 REF
2.87 REF
Mounting Rail
[35mm DIN Rail]
PPO
Customer Installation
Instructions
p/n 754440
insert the Safety Key into the ferrite case slots provided to open the case. See Figure 1
Placement of Ferrite MUST BE WITHIN 1" to device being connected.
Position cable into ferrite case and using only hand pressure SNAP the case closed.
Safety Key P/N 755125
Cable, Catagory 5
Min. Dia. .17Max. Dia .24
Figure 1
Safety Key
Ferrite
Notes:
1. Remove Tie-wrap and plastic bag containing Ferrite ONLY PRIOR TO CONNECTING COMMUNICATION CABLE TO UNIT.
2. Follow customer installation instruction for Ferrite placement.
DETAIL A

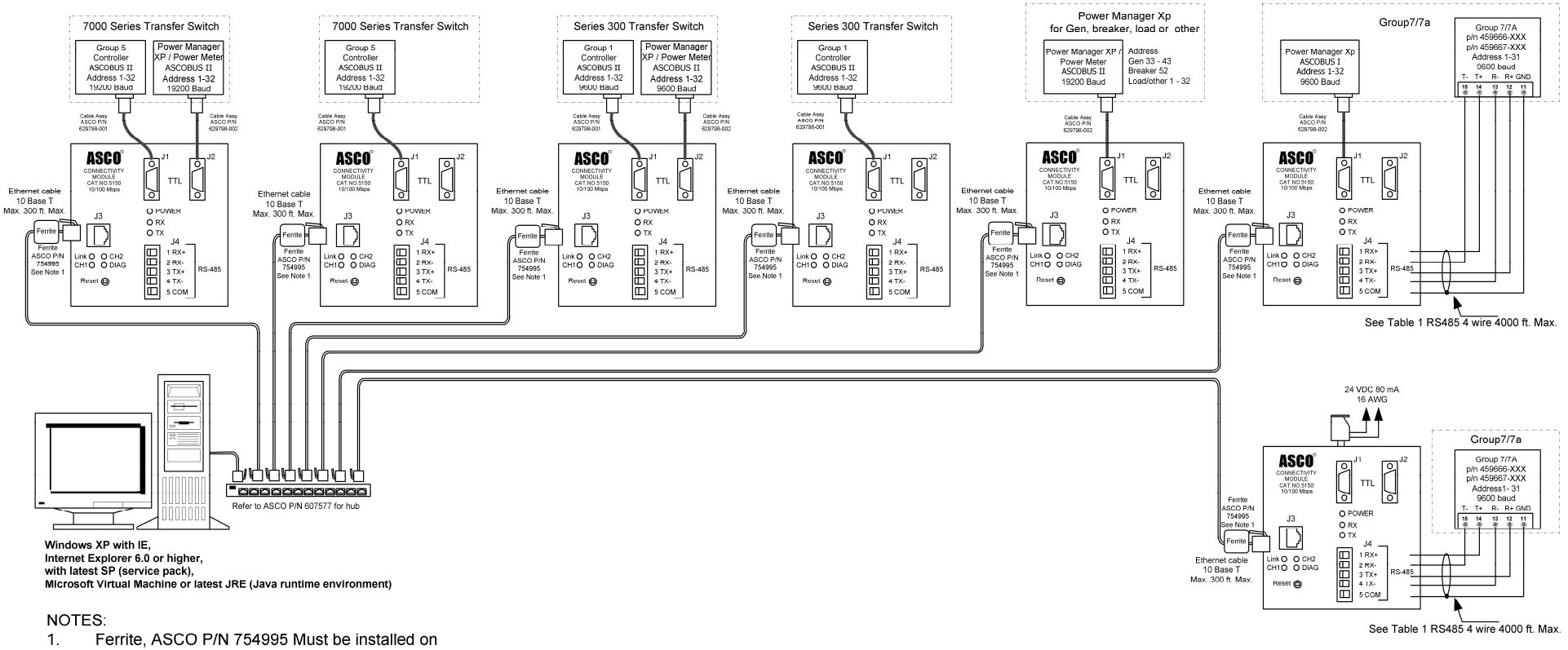


Connectivity Summary Information

Device Connectivity to Connectivity Module	Connectivity Module J1 & J2 (TTL)	Connectivity Module J4 (RS-485)	Connectivity Module J3 (Ethernet)
7000 series ATS with or w/o Power Manager XP / Power Meter	ATS's, PM's, ASCO II Protocol, 19.2K/9600 Bps		
Series 300 ATS with or w/o Power Manager XP / Power Meter	ATS's, PM's ASCO II Protocol, 9600 Bps		
Series 900 ATS with or w/o Power Manager XP	PM's, ASCO I Protocol, 9600 Bps	ATS's, ASCO I Protocol, 9600 Bps	
Power Manager XP / Power Meter	PM's ASCO II Protocol, 19.2K/9600 Bps	Serial Modbus RTU Protocol, 19.2K/9600 Bps	
Power Manager XP at Engines / Power Meter	PM's ASCO II Protocol, 19.2K/9600 Bps(Add. 33-43)	Serial Modbus RTU Protocol, 19.2K/9600 Bps	
Power Manager XP at Circuit Breakers / Power Meter	PM's ASCO II Protocol, 19.2K/9600 Bps(Add. 52)	Serial Modbus RTU Protocol, 19.2K/9600 Bps	
Supported Third Party Devices		**Serial Modbus RTU Protocol, 19.2K/9600 Bps**	
PC - Windows XP with IE, Internet Explorer 6.0 or higher, with latest SP (service pack), Microsoft Virtual Machine or latest JRE (Jave runtime environment)			PC's

Note: Baud rates of connectivity module and all other devices connected to it MUST BE SAME.

Factory default settings:
IP Address 169.254.1.1
Subnet 255.255.0.0
Gateway 0.0.0.0



Windows XP with IE,
Internet Explorer 6.0 or higher,
with latest SP (service pack),
Microsoft Virtual Machine or latest JRE (Java runtime environment)

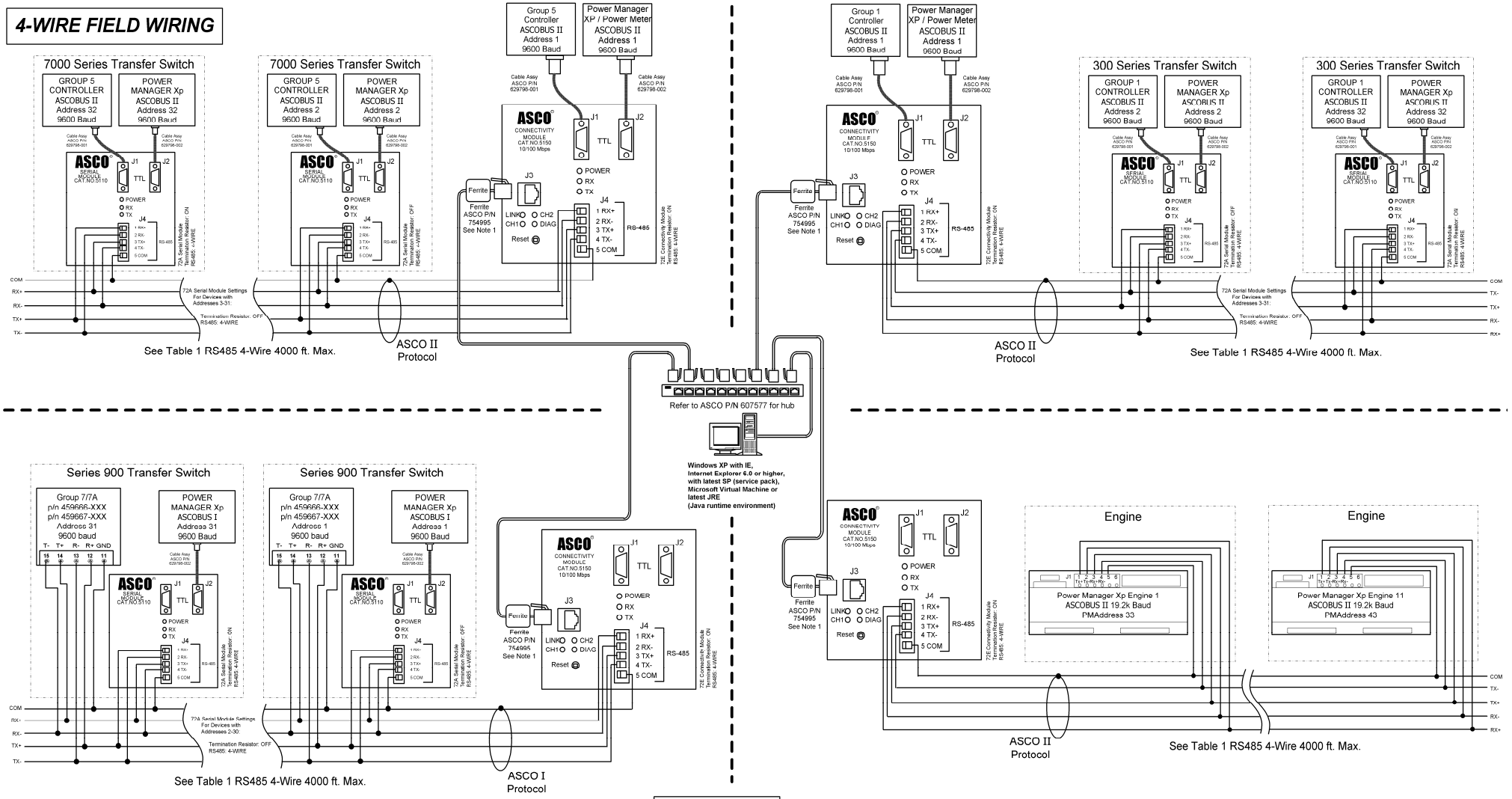
NOTES:

1. Ferrite, ASCO P/N 754995 Must be installed on Ethernet Cable within 1" of 72E Connectivity Module.

Ethernet Communication Cable							
Type	Known as	Max. Length of Segment	Max. Stations per Segment	Cable Type	Connectors	Cable Impedance/ Terminations	Belden P/N (reference)
10 BaseT	Twisted Pair	328ft. (100 meters)	1024	UTP CAT3, 4, 5	RJ-45		7882A

TABLE 1
Acceptable Communication Cable
Standard 80°C
Belden 9842
Belden 9829
Alpha 6202C
Alpha 6222C
Plenum Rated
Belden 89729
Belden 82729
Alpha 58902

4-WIRE FIELD WIRING



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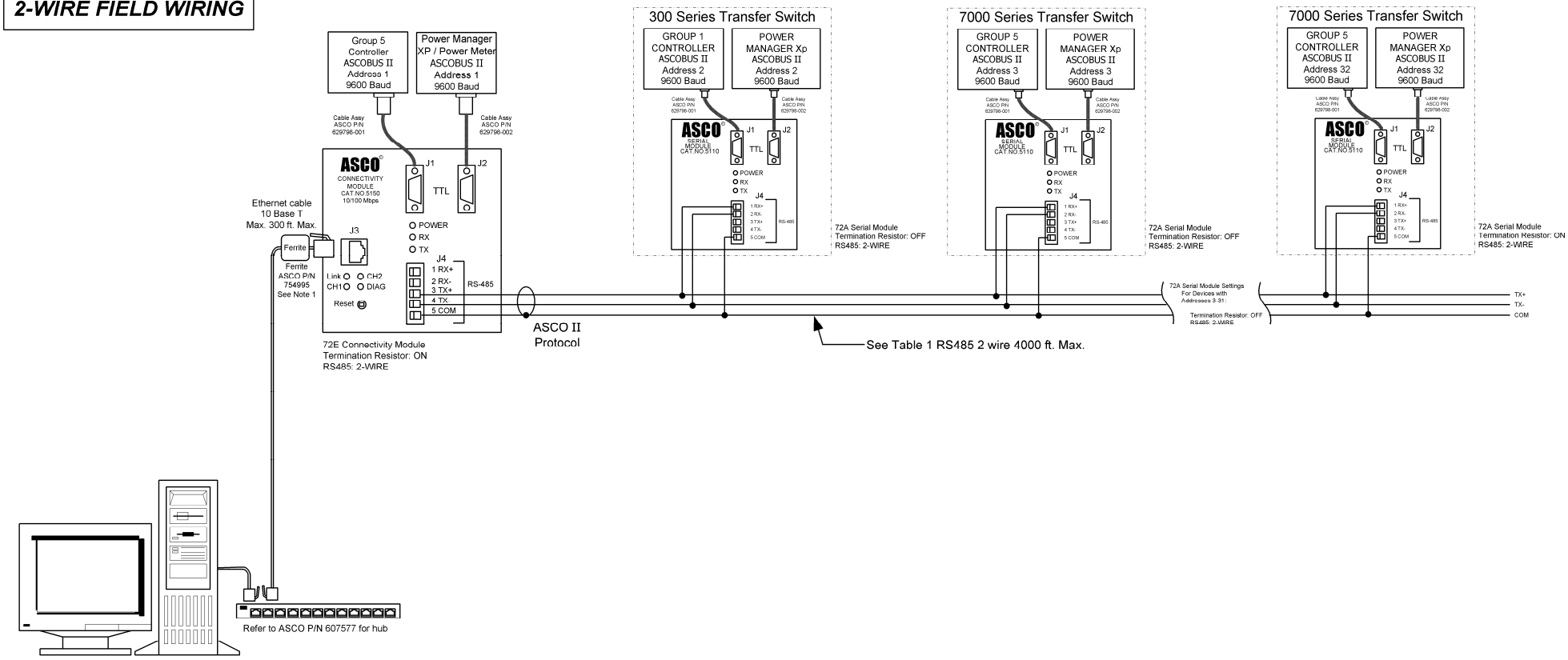
Plenum Rated
Belden 89729
Belden 82729
Alpha 58902

2-WIRE FIELD WIRING



Windows XP with IE,
Internet Explorer 6.0 or higher,
with latest SP (service pack),
Microsoft Virtual Machine or latest JRE (Jave runtime environment)

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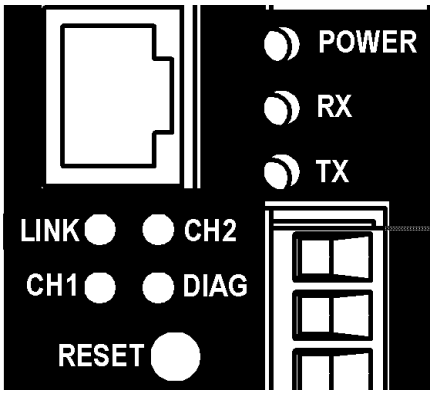
Alpha 58902

Status LEDs



LED	LED Description	LED Function / Mode of Operation
POWER	Power indication status. GREEN/AMBER	Solid GREEN – functioning as a Connectivity Module (Acc. 72E). Solid AMBER – functioning as a Serial Module (Acc. 72A).
RX	Data receiving status. GREEN	Blinking GREEN – indicates receiving data from a client.
TX	Data transmit status. GREEN	Blinking GREEN – indicates transmitting data to a client.
LINK	Link status. GREEN	Solid GREEN – indicates active Ethernet connection.
CH1	Client connection status. GREEN	Blinking GREEN – indicates active Ethernet client connection.
CH2	Additional Diagnostic LED. YELLOW	Blinking YELLOW then off – indicates server disconnection because of Ethernet client inactivity. Solid YELLOW then off – indicates server disconnection due to Ethernet client disconnection.
DIAG	Diagnostic. RED	Off – indicates no error. Short blinking RED then off – indicates active client/server write process. Long blinking light then off – indicates server is receiving unrecognized request packet from an Ethernet client. Solid RED – indicates major error.

How to Install the Connectivity Module on 7000 & 4000 Series and Series 300 ATSs

The Connectivity Module (CM) mounts on a DIN rail under the ATS Controller (Group 5 & 1). A short serial cable connects the CM to the Controller. If a Power Manager (PM) or Digital Power Meter (DPM) is present, a long serial cable connects the CM to the PM. Refer to installation drawings provided and follow the steps below to install the Connectivity Module.

Connectivity Module Kit K889950 for 7000 & 4000 Series and Series 300 only		**Connectivity Module Kit K889950-001** for 7000 & 4000 Series and Series 300 with PM or DPM	
Connectivity Module 5150	629800-004	Connectivity Module 5150	629800-004
DIN Rail and Hardware	754607	DIN Rail and Hardware	754607
10-in. Serial Cable for Controller	629798-001	10-in. Serial Cable for Controller	629798-001
		4-ft Serial Cable for PM or DPM *	629798-002

* A 9-foot serial cable (629798-004) is required for G7ATB, G7ACTB, G7ADTB.

⚠ DANGER

To avoid possible shock, burns, or death, deenergize all electrical sources to the ATS before installing the Connectivity Module.

1. De-energize both Normal and Emergency sources that feed the ATS. Open enclosure door and check with a non-contact AC voltage detector.
2. Mount the DIN rail (supplied in the kit) onto two studs (on the door) below the Controller. Connectivity Module will mount on the right side.
3. Install Connectivity Module onto DIN rail by hooking the bottom of module on bottom of DIN rail and rocking it upward unit it snaps in place.
4. Install the 10-inch serial cable between the Controller receptacle (J7 on Group 5, J4 on Group 1) and the Connectivity Module J1 receptacle.
5. If a PM (or DPM) is present, connect the 4-foot serial cable between the PM J5 receptacle (or DPM J2 receptacle) and the Connectivity Module J2 receptacle.*

Now test communications (go to page 1-2).

How to Install the Connectivity Module on ASCO 940/962 ATSs

The Connectivity Module (CM) mounts on a DIN rail near the ATS Control Panel. A separate power supply is needed unless it is connected to a Power Manager (PM). Group 6A/7A Control Panel must have a Serial Communication Kit added. A single communication cable (2 twisted pairs and overall shield connects the CM to the Control Panel). Refer to installation drawings provided and follow the steps below to install the Connectivity Module.

Connectivity Module Kit K889953 for ASCO 940/962 only		**Connectivity Module Kit K889953-001** for ASCO 940/962 with PM	
Connectivity Module 5150	629800-004	Connectivity Module 5150	629800-004
DIN Rail and Hardware	754610	DIN Rail and Hardware	754610
Serial Com. Kit for Group 6A/7A CP *	467508	Serial Com. Kit for Group 6A/7A CP *	467508
		Serial Cable for PM	629798-002

* Serial communication & transient protection boards.

Required Power Supply ** not supplied	**Communication Cable** (4 wires and an overall shield) not supplied
24 Vdc, 80 mA ** use 16 AWG wire	Belden 9842, 9829, 89729, 82729 or Alpha 6202C, 6222C, 58902 only

** If a Power Manager (PM) is present, a power supply is not needed for the Connectivity Module (CM). The serial cable from the PM provides the power to the CM.

⚠ DANGER

To avoid possible shock, burns, or death, deenergize all electrical sources to the ATS before installing the Connectivity Module.

1. De-energize both Normal and Emergency sources that feed the ATS. Open enclosure door and check with a non-contact AC voltage detector.
2. Mount DIN rail (supplied in the kit) onto two studs (on the door) below or adjacent to the Control Panel.
3. Install the Connectivity Module onto DIN rail.
4. Prepare and connect the specified communication cable between the Control Panel terminals and the Connectivity Module J4 terminals as listed below:
5. Prepare and connect the 24 Vdc power supply to the Connectivity Module. Use 16 AWG wiring to J5 terminal plug (1 is + positive, 2 is – negative).

Now test communications (go to page 1-2).

How to Install the Connectivity Module for a stand-alone Power Manager or Digital Power Meter

The Connectivity Module (CM) mounts on a DIN rail near the Power Manager (PM) or Digital Power Meter (DPM). A long serial cable connects the Connectivity Module to the PM or DPM. Refer to installation drawings provided and follow the steps below to install the Connectivity Module.

Connectivity Module Kit K889958 for a stand-alone Power Manager or Digital Power Meter (not connected to an ATS)	
Connectivity Module 5150	629800-004
DIN Rail and Hardware	754610
4 ft. Serial Cable for PM or DPM	629798-002

⚠ DANGER

To avoid possible shock, burns, or death, deenergize all electrical sources to the ATS before installing the Connectivity Module.

1. De-energize the power source that feeds the PM (or DPM). Open enclosure door and check with a non-contact AC voltage detector.

2. Mount the DIN rail (supplied in the kit) onto two studs (on the door) below or adjacent to the PM or DPM.

3. Install Connectivity Module onto DIN rail by hooking the bottom of module on bottom of DIN rail and rocking it upward unit it snaps in place.

4. Install the 4-foot serial cable between the Power Manager J5 receptacle (or Digital Power Meter J2 receptacle) and the Connectivity Module J2 receptacle.

Now test communications (go to next column).

How to Test Communication to the Connectivity Module

You need the following settings from your network administrator for <u>each</u> Connectivity Module (CM) connected to an Automatic Transfer Switch (ATS), Power Manager (PM), or Digital Power Meter (DPM). Fill in the form provided in the Appendix:

IP Address: _____ (unique for each module)
Subnet mask _____ (usually same for all modules)
Gateway: _____ (usually *blank*)

Required items:

- Portable laptop computer with network card, running *Windows Xp* and *Windows Internet Explorer 6.0 +* installed.
- Ethernet crossover network cable (part no. 629590-006).
- Connectivity Module connected to the ATS, PM, or DPM.

1. Directly connect the specified Ethernet crossover cable between your laptop's Ethernet jack and the deenergized Connectivity Module jack J3.

2. For safety, close the ATS, PM, or DPM enclosure door as far as possible (with the crossover cable running to the laptop computer <u>outside</u> the enclosure). Then energize ATS, PM, or DPM and the Connectivity Module.

3. Refer to the **Appendix** and select the appropriate *TCP/IP Installation & Configuration* instructions for your laptop computer's operating system. This procedure sets up your laptop computer (if necessary) for network connections and tests communications to the Connectivity Module.

4. After you have confirmed communication with the Connectivity Module, continue to the next page to view and change the configuration of the Connectivity Module and ATS, PM, or DPM.

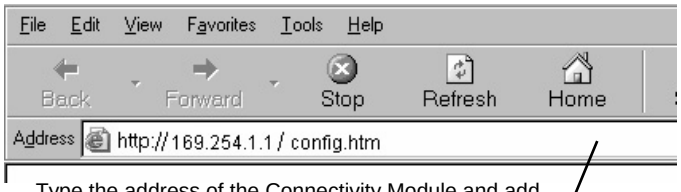
Now view and change the configuration
(go to page 1-3)

How to View & Change Configuration Pages from a Connectivity Module

To view and change configuration pages on a client computer, follow these steps:

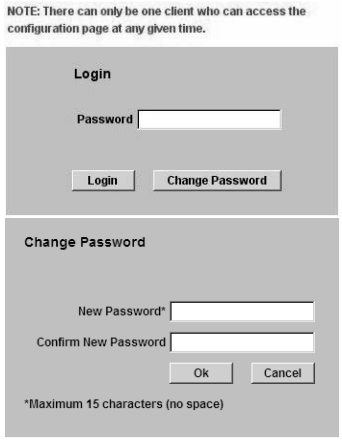
1. Be sure that your computer is connected to the Internet.
2. Start *Microsoft Internet Explorer* browser on computer.
3. In the address bar, type in the address of the Connectivity Module, add /config.htm, press *Enter* :

http://169.254.1.1/config.htm



PASSWORD

On the Login screen there is no password until you enter one. If you click *Login* without entering a password, there is no protection. If you want protection, click *Change Password*; the Change Password screen appears. Then enter a password (15 char. max.) in *New Password*, enter it again in *Confirm New Password*, and click *OK*. You can set only one password.



The Connectivity Module sends HTML files to the client computer. *Internet Explorer* interprets these HTML files, formats them, and displays the pages to the user.

Pages 2-1, 2-2, 3-1, 3-2, 4-1, 5-1 show Device Configurator screens for ATSs and PMs or DPMs (go to the appropriate section for the specific ATS, PM, or DPM).

Tip

You can add the address to your *Favorites* for convenient access to multiple Connectivity Modules; follow these steps:

1. Click *Favorites*, then click *Add to Favorites*, click *New Folder*, then type the *Folder name* (ATS Configuration, for example), and click *OK*.
2. To rename the address, highlight it, and type the new name, and click *OK*.

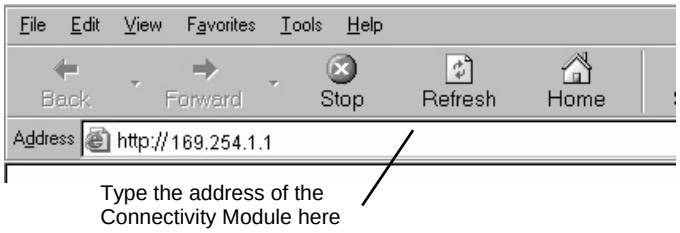
When you are finished viewing pages, close *Internet Explorer*.

How to View Pages from a Connectivity Module after it is installed

After installation, testing, and configuration is completed, to view pages on a client computer, follow these steps:

1. Be sure that your computer is connected to the Internet.
2. Start *Microsoft Internet Explorer* browser on the computer.
3. In the address bar, type in the address of the Connectivity Module:

http://169.254.1.1



The Connectivity Module sends HTML files to the client computer. *Internet Explorer* interprets these HTML files, formats them, and displays the pages to the user.

Pages 2-3, 3-3, 4-2, 5-2, 5-3 show typical HTML pages (Detail screens) for ATSs and PMs or DPMs (go to the appropriate section for the specific ATS, PM, or DPM).

Tip

You can add the address to your *Favorites* for convenient access to multiple Connectivity Modules; follow these steps:

1. Click *Favorites*, then click *Add to Favorites*, click *New Folder*, then type the *Folder name* (ATSs, for example), and click *OK*.
2. To rename the address, highlight it, and type the new name, and click *OK*.
3. When you are finished viewing pages, close *Internet Explorer*.

Device Configurator Screen for *7000 & 4000 Series* ATSs

The **Device Configurator Screen** for *7000* & *4000 Series* ATSs shows the Group 5 controller configuration settings (right side) and Connectivity Module (server) configuration settings (left side) for the selected ATS.

Group 5 Controller Configuration (right side)

Enter or change the ATS **Name** (8 char. max.)and the ATS **Location** (20 char. max.). Press the ***Update*** button when finished to save the controller configuration changes.

Connectivity Module (server) Configuration (left side)

Several configuration settings must be set appropriately as described below. Press the ***Update Server*** button when finished to save configuration changes.

Consult with your network administrator for these 4 settings:
- **IP Address**
- **Subnet Mask**
- **Gateway Address**
- **TCP Port Number**
  (Range of ports allowed is: 10024-65535, but do not use ports 14000-14009 or 30718)

Serial Port Speed 19200

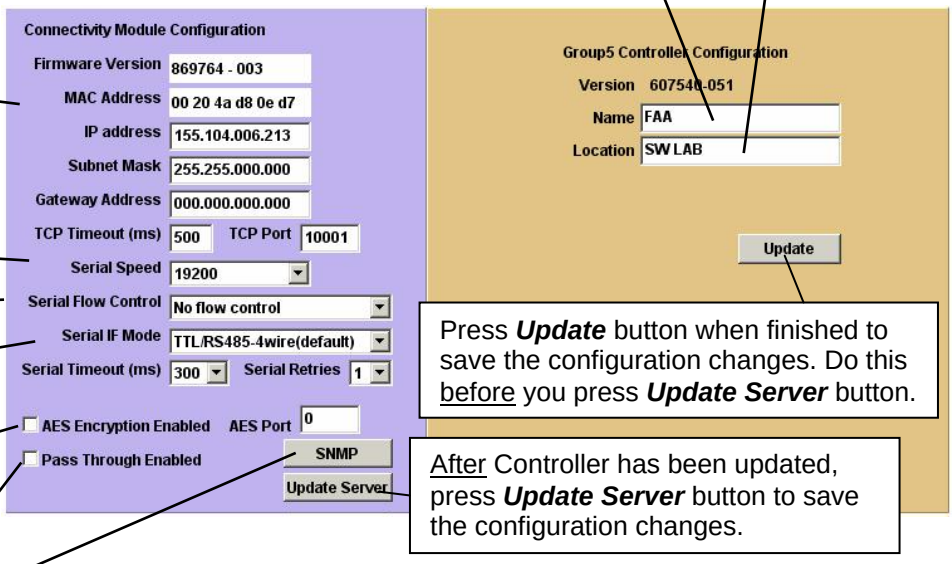
Flow Control No flow control

Interface Mode RS485-4 or 2 Wire

Encyrption enable check box and assign an AES port (same range as TCP port but do not use the same port number used for TCP port.)

3rd party device running own protocols

SNMP refer to Appendix A-5



Device Configurator Screen for 7000 & 4000 Series ATSs

When a Power Manager or Digital Power Meter is connected, additional buttons appear at the bottom of the Connectivity Module Device Configuration screen.

Press to configure the Power Manager or Digital Power Meter.

Press to configure the Group 5 Controller.

After Controller, PM, or DPM has been updated, press ***Update Server*** button to save the configuration

Additional Buttons on Device Configurator Screen for
7000 & 4000 Series ATSs with Power Manager or Digital Power Meter

Device Configurator Screen for *7000 & 4000 Series* ATSs with a PM or DPM

If a Power Manager (PM) or Digital Power Meter (DPM) is used with a *7000* & *4000 Series* ATS, a button appears on the lower left corner of the **Connectivity Module Device Configurator** screen. Press the ***Config PM*** button to display the **Power Manager** or **Power Meter Configuration** screen (right side).

Power Manager or Power Meter Configuration

Enter or change the PM or DPM **Name** (8 char. max.) and **Location** (20 char. max.). Several configuration settings must be set appropriately. Press the ***Update*** button when finished to save the PM or DPM configuration changes.

Input Name & Output Names (Power Manager only)

For a Power Manager, press the ***Config I/O Name*** button to display the **Input Name and Output Name** screen. Enter or change the names (16 char. max.) of the inputs and outputs. Press the ***Update*** button when finished to save.

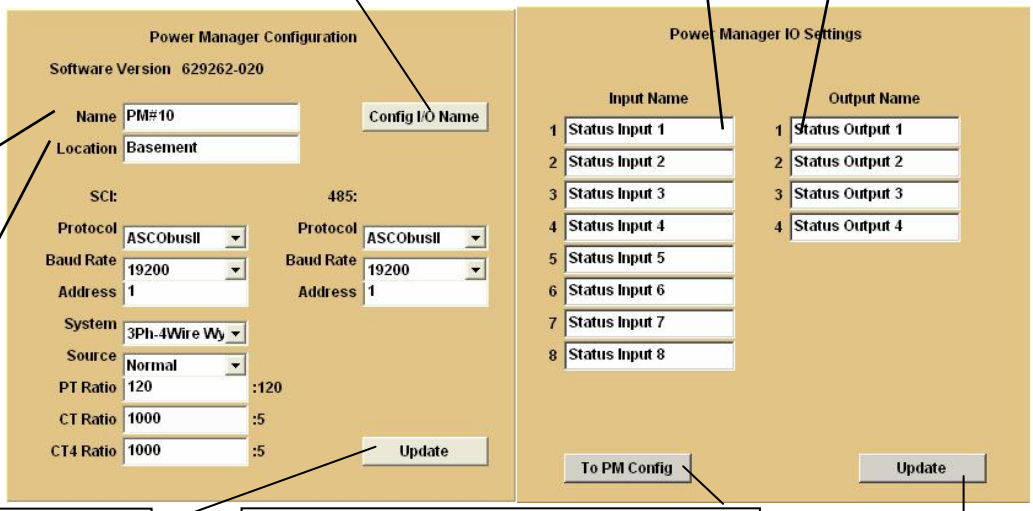
PM or DPM Configuration | Input & Output Names (PM only)

Press ***Config I/O Name*** button to display Input & Output Names screen.

Input names

Output names

Power Manager



Power Manager name

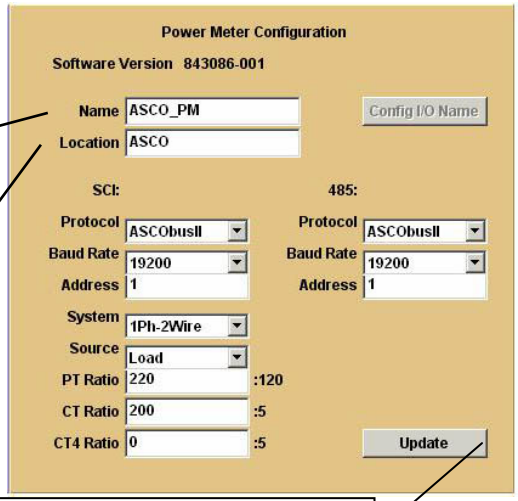
Power Manager location

Press ***Update*** button when finished to save the configuration

Press ***To PM Config*** button to return to Power Manager Configuration screen.

Press ***Update*** button when finished to save the names.

Power Meter



Power Meter name

Power Meter location

Press ***Update*** button when finished to save the configuration

For a 7ATB (automatic transfer & bypass-isolation switch) with a Power Manager, see page 2-3 for the Power Manager IO Settings.

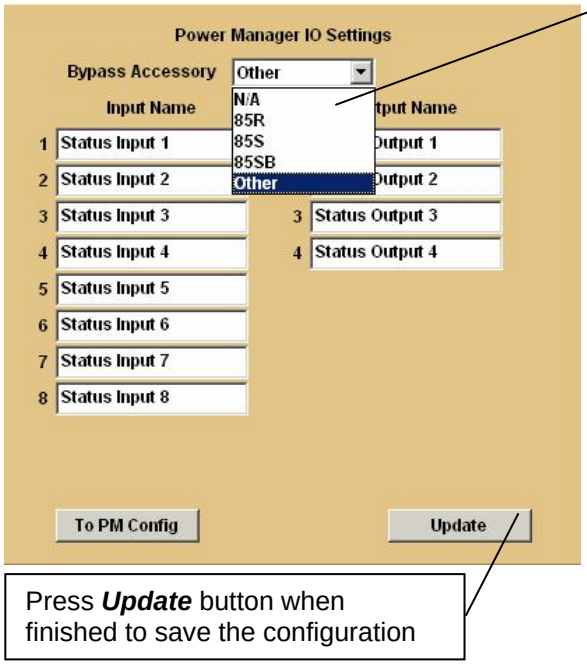
NOTE

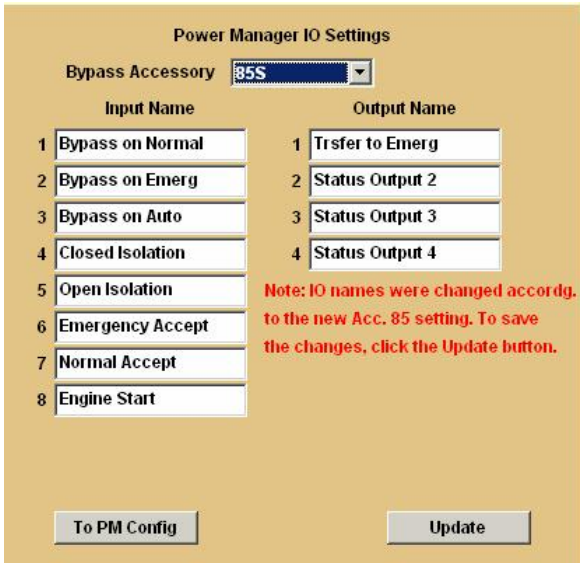
Update the PM, DPM, or Group 5 Controller first if you need to update the server. Do not close the browser during the updating process. The PM, DPM, or CP update request will be discarded if the browser is closed.

Configurator Screen Input and Output Names for a *7ATB* with Power Manager

For 7ATB only (7000 Series Automatic Transfer & Bypass-Isolation Switch), the Power Manager selection (Accessory 85 suffix letter designation) must be specified. The selection automatically assigns descriptive tags for the associated inputs and outputs applicable to the chosen accessory. These fields will be pre-populated with their known designations, but they are editable by the user. The user must press the ***Update*** button to save the configuration selection and any changes.

Refer to the wiring diagram provided with the 7ATB. It shows the specific Accessory 85 suffix letter used. Set the *Power Manager IO Settings* to the Accessory 85 specified on the wiring diagram.





Example: Accessory 85S selected

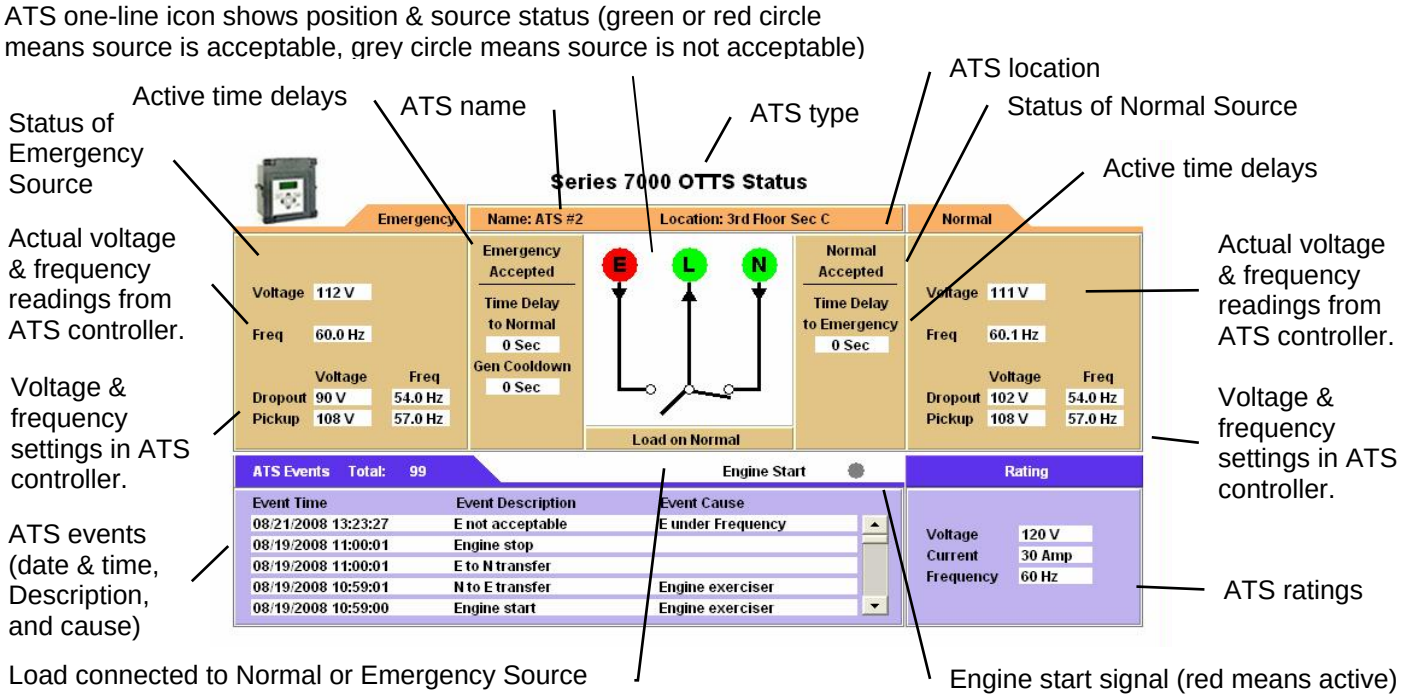
The table below shows the descriptive tags assigned for each Accessory 85 selection, which are unique to 7ATBs. The *N/A* selection does not provide any descriptive tags.

Accessory 85 Descriptive Tags Assigned

I/O	Accessory			
	85R	85S	85SB	Other
Input 1	Bypass on Normal	Bypass on Normal	Bypass on Normal	Status Input 1
Input 2	Bypass on Emerg	Bypass on Emerg	Bypass on Emerg	Status Input 2
Input 3	Closed Isolation	Bypass on Auto	Bypass on Auto	Status Input 3
Input 4	Open Isolation	Close Isolation	Close Isolation	Status Input 4
Input 5	Open Isolation	Open Isolation	Open Isolation	Status Input 5
Input 6	Test Mode	Emergency Accept	Emergency Accept	Status Input 6
Input 7		Normal Accept	Normal Accept	Status Input 7
Input 8		Engine Start	Engine Start	Status Input 8
Output 1		Trsfer To Emerg	Trsfer To Emerg	Status Output 1
Output 2				Status Output 2
Output 3				Status Output 3
Output 4				Status Output 4

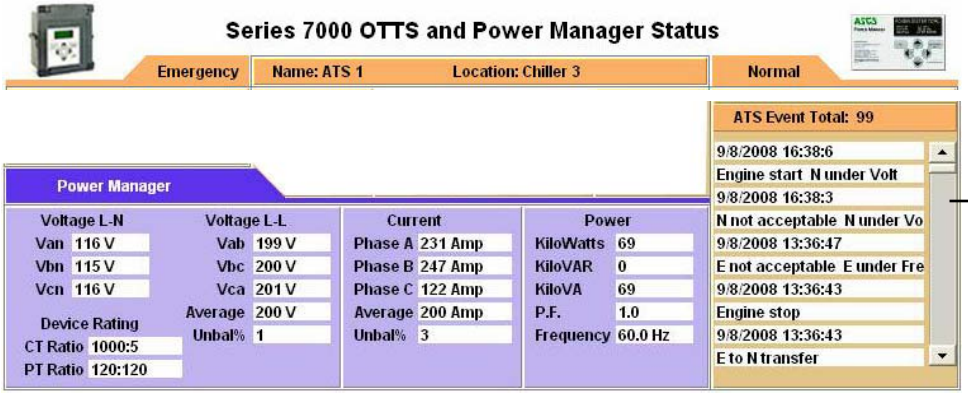
Detail Screen for *7000 & 4000 Series* ATSs

The **Detail Screen** for *7000* & *4000 Series* ATSs shows the switch location, ratings, timer settings, actual timer values, pickup and dropout settings, event logging, and other status indications.



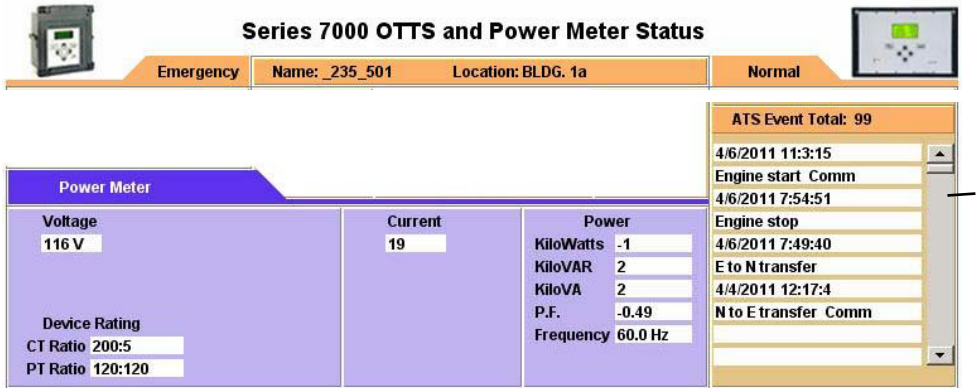
Detail Screen for *7000 & 4000 Series* ATSs with a Power Manager

Same as above and adds information from the Power Manager (voltage current, power, and rating).



Detail Screen for *7000 & 4000 Series* ATSs with a Digital Power Meter

Same as above and adds information from the Power Meter (voltage current, power, and rating).



Device Configurator Screen for *Series 300* ATSs

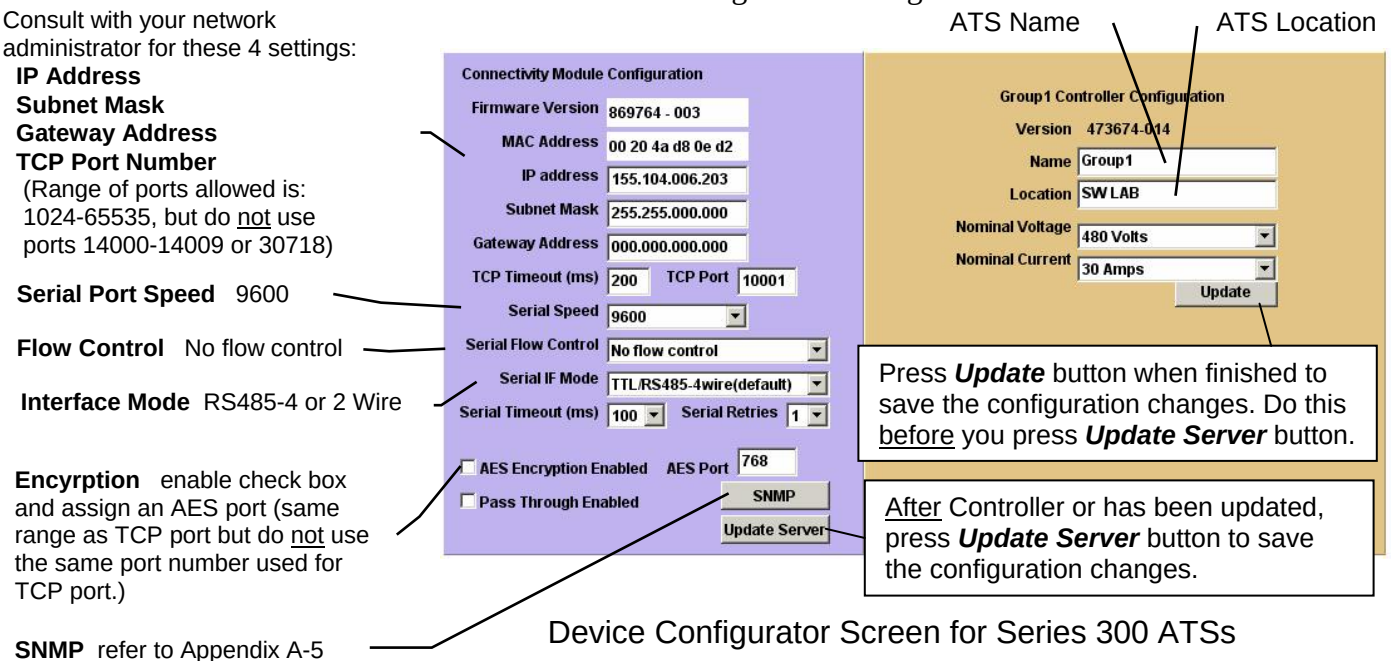
The **Device Configurator Screen** for *Series 300* ATSs shows the Group 1 controller configuration settings (right side) and the Connectivity Module (server) configuration settings (left side) for the selected ATS.

Group 1 Controller Configuration (right side)

Enter or change the ATS **Name** (8 char. max.) and the ATS **Location** (20 char. max.). Press the ***Update*** button when finished to save the Group 1 controller configuration changes.

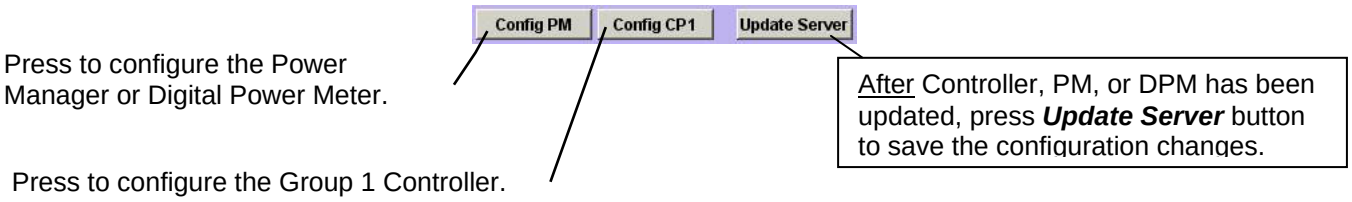
Connectivity Module (server) Configuration (left side)

Several configuration settings must be set appropriately as described below. Press the ***Update Server*** button when finished to save configuration changes.



Device Configurator Screen for Series 300 ATSs

When a Power Manager or Digital Power Meter is connected, additional buttons appear at the bottom of the Connectivity Module Device Configuration screen.



Additional Buttons on Device Configurator Screen for Series 300 ATSs with Power Manager or Digital Power Meter

Device Configurator Screen for *Series 300* ATSs with a PM or DPM

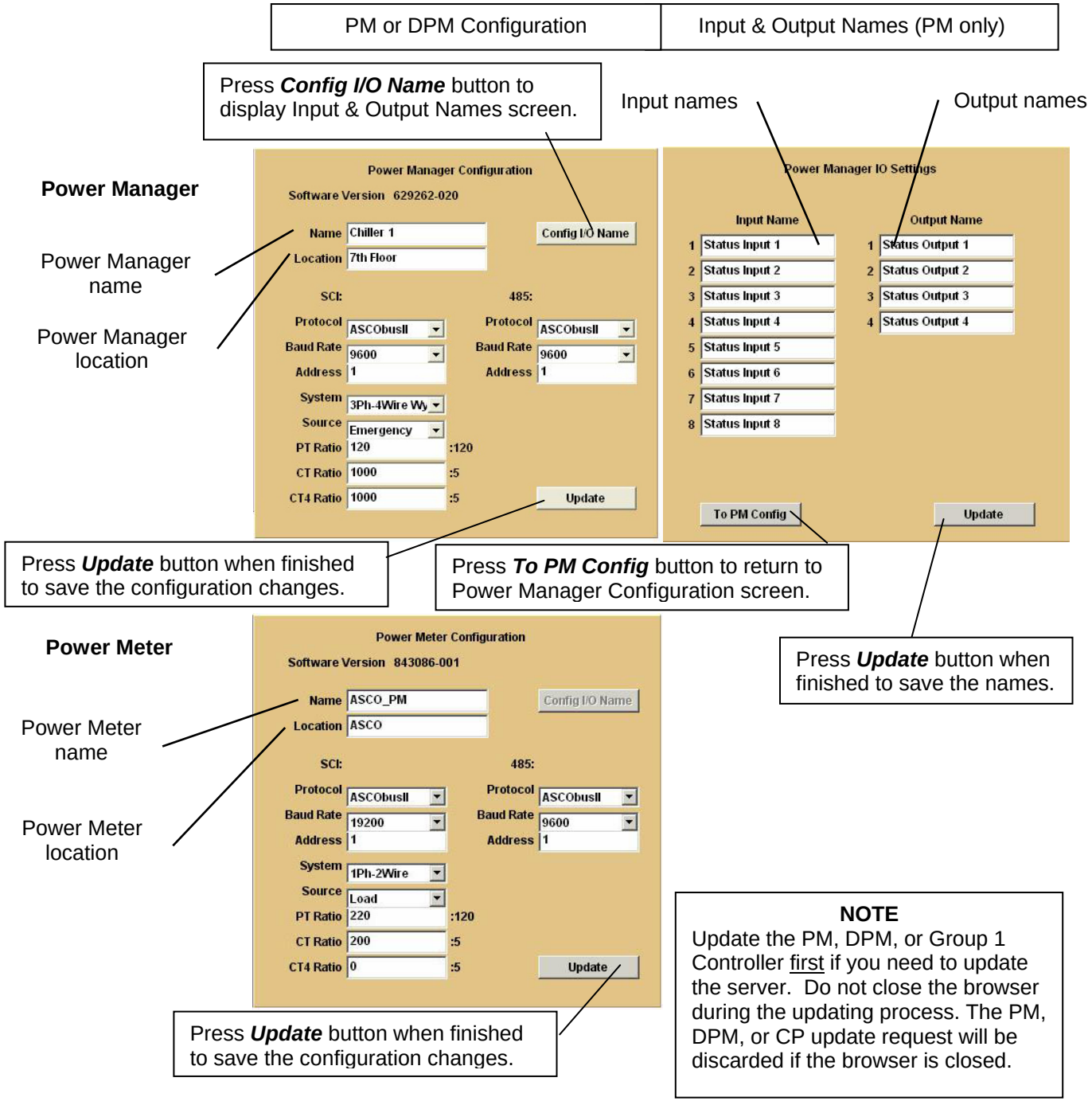
If a Power Manager (PM) or a Digital Power Meter (DPM) is used with a *Series 300* ATS, a button appears on the lower left corner of the **Connectivity Module Device Configurator** screen. Press the ***Config PM*** button to display the **Power Manager** or **Power Meter Configuration** screen (right side).

Power Manager or Power Meter Configuration

Enter or change the PM or DPM **Name** (8 char. max.) and **Location** (20 char. max.). Several configuration settings must be set appropriately. Press the ***Update*** button when finished to save the PM or DPM configuration changes.

Input Name & Output Names (Power Manager only)

For a Power Manager, press the ***Config I/O Name*** button to display the **Input Name and Output Name** screen. Enter or change the names (16 char. max.) of the inputs and outputs. Press the ***Update*** button when finished to save.

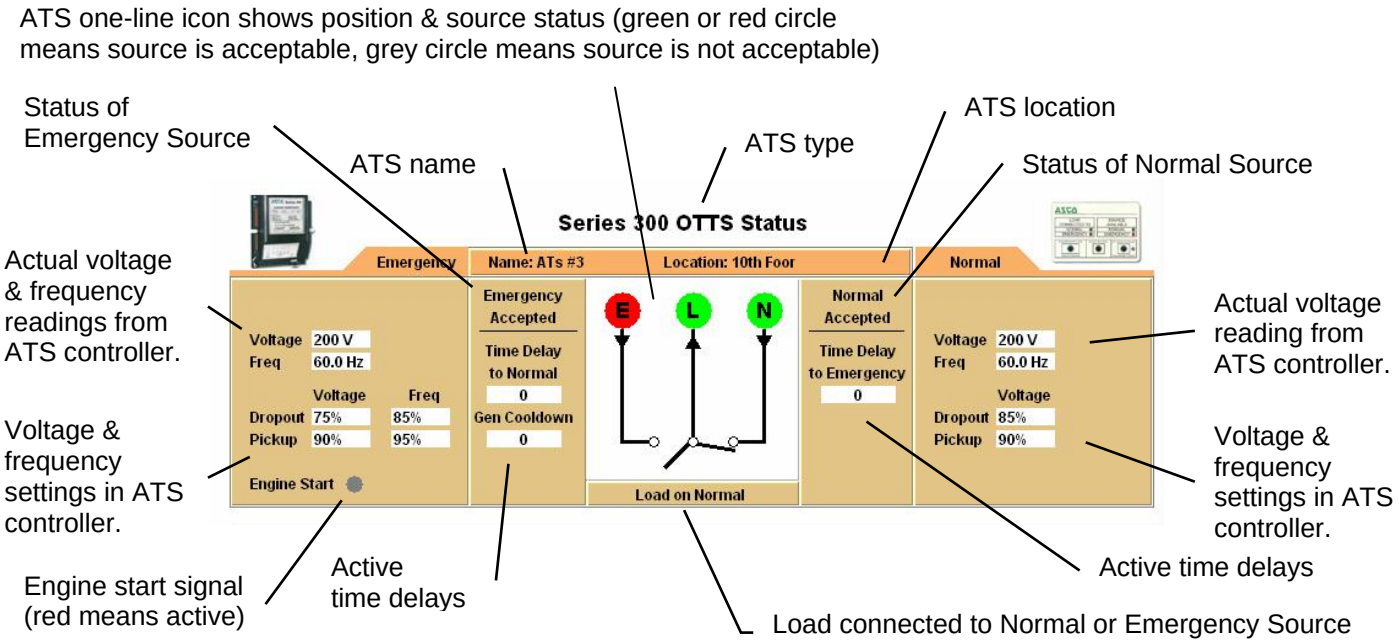


NOTE

Update the PM, DPM, or Group 1 Controller first if you need to update the server. Do not close the browser during the updating process. The PM, DPM, or CP update request will be discarded if the browser is closed.

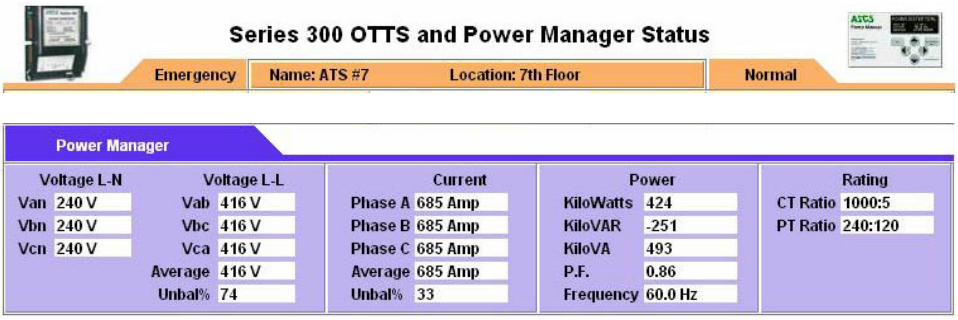
Detail Screen for *Series 300* ATSs

The **Detail Screen** for *Series 300* ATSs shows the switch location, ratings, timer settings, actual timer values, pickup and dropout settings, and other status indications.



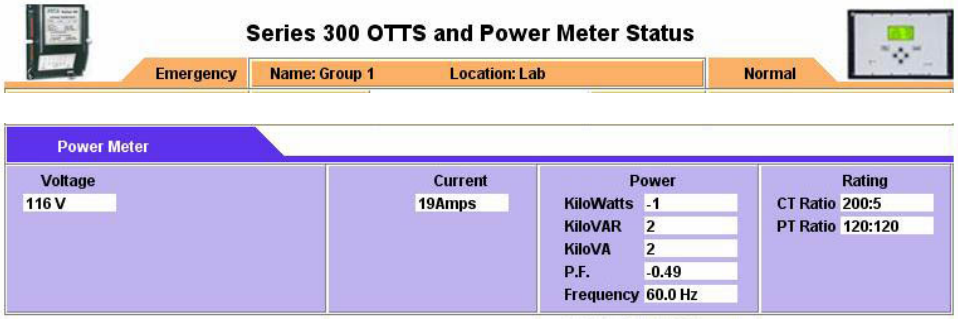
Detail Screen for *Series 300* ATSs with a Power Manager

The **Detail Screen** for *Series 300* ATSs with a Power Manager is the same as above and adds information from the PM (voltage, current, power, and rating).



Detail Screen for *Series 300* ATSs with a Digital Power Meter

The **Detail Screen** for *Series 300* ATSs with a Digital Power Meter is the same as above and adds information from the DPM (voltage, current, power, and rating).



Device Configurator Screen for *ASCO 940/962* ATSs

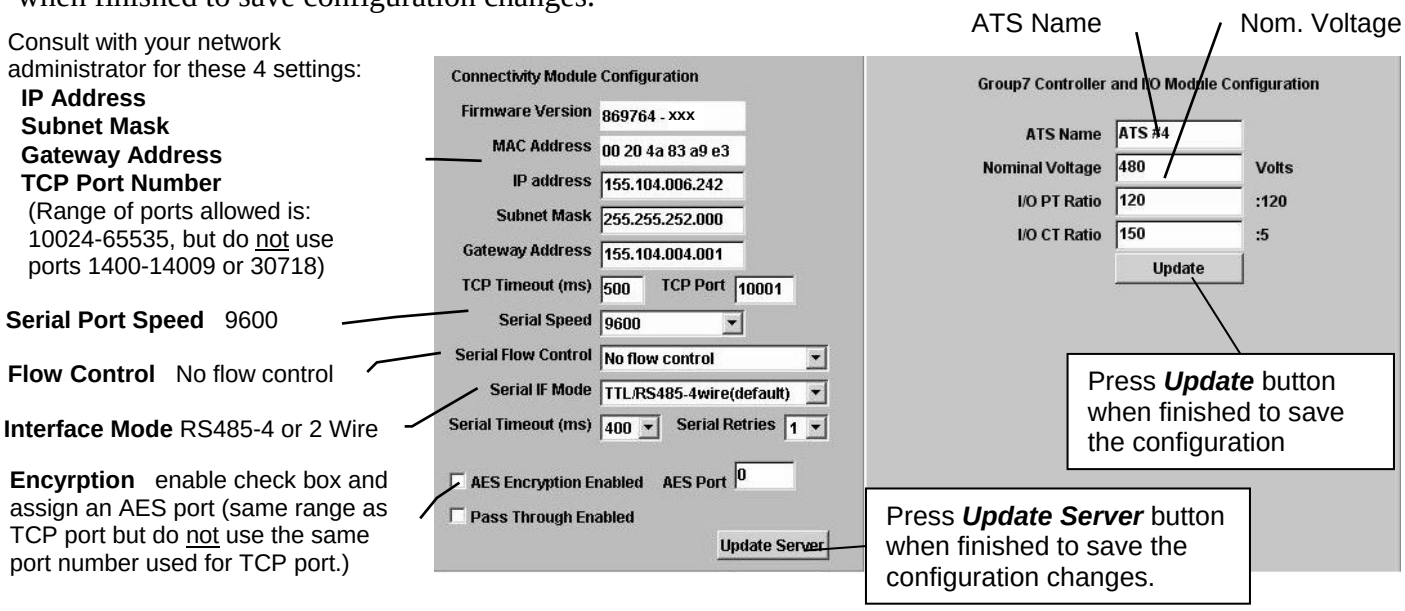
The **Device Configurator Screen** for *ASCO 940/962* ATSs shows the Group 7A controller configuration settings (right side) and the Connectivity Module (server) configuration settings (left) for the selected ATS.

Group 7A Controller Configuration (right side)

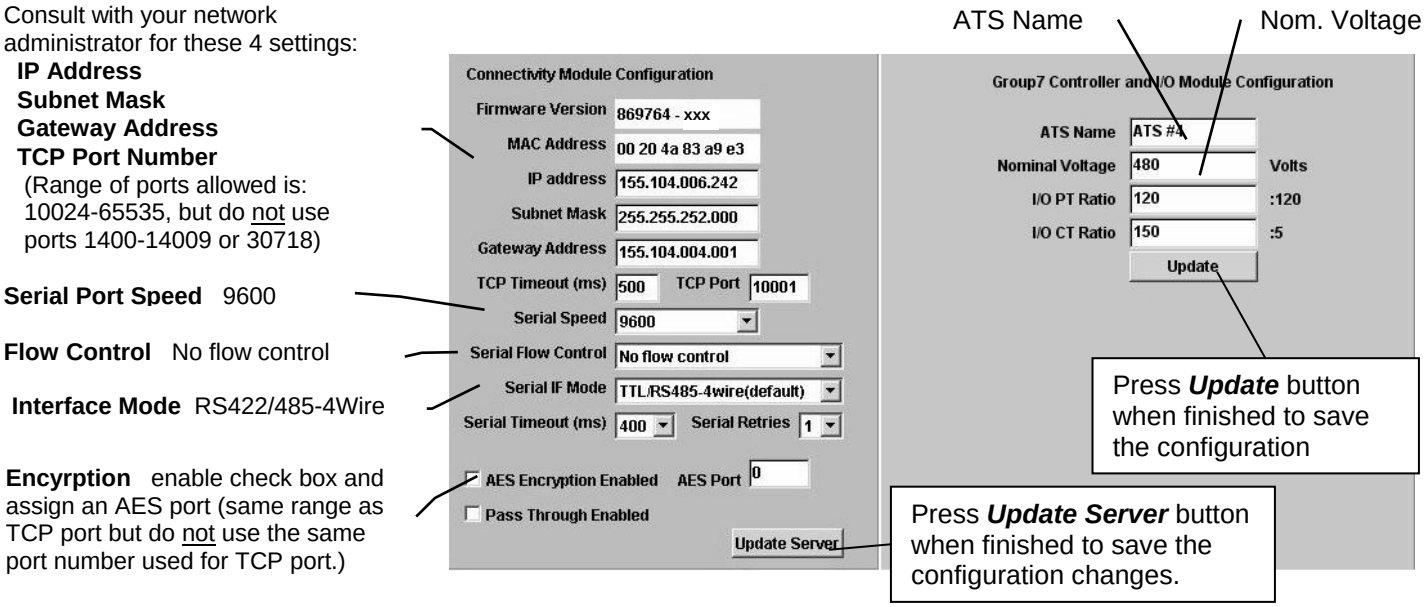
Enter or change the ATS **Name** (18 char. max.) and ATS **Nominal Voltage** (must be entered to get correct reading). Press the ***Update*** button when finished to save the Group 7A controller configuration changes.

Connectivity Module (server) Configuration (left side)

Several configuration settings must be set appropriately as described below. Press the ***Update Server*** button when finished to save configuration changes.



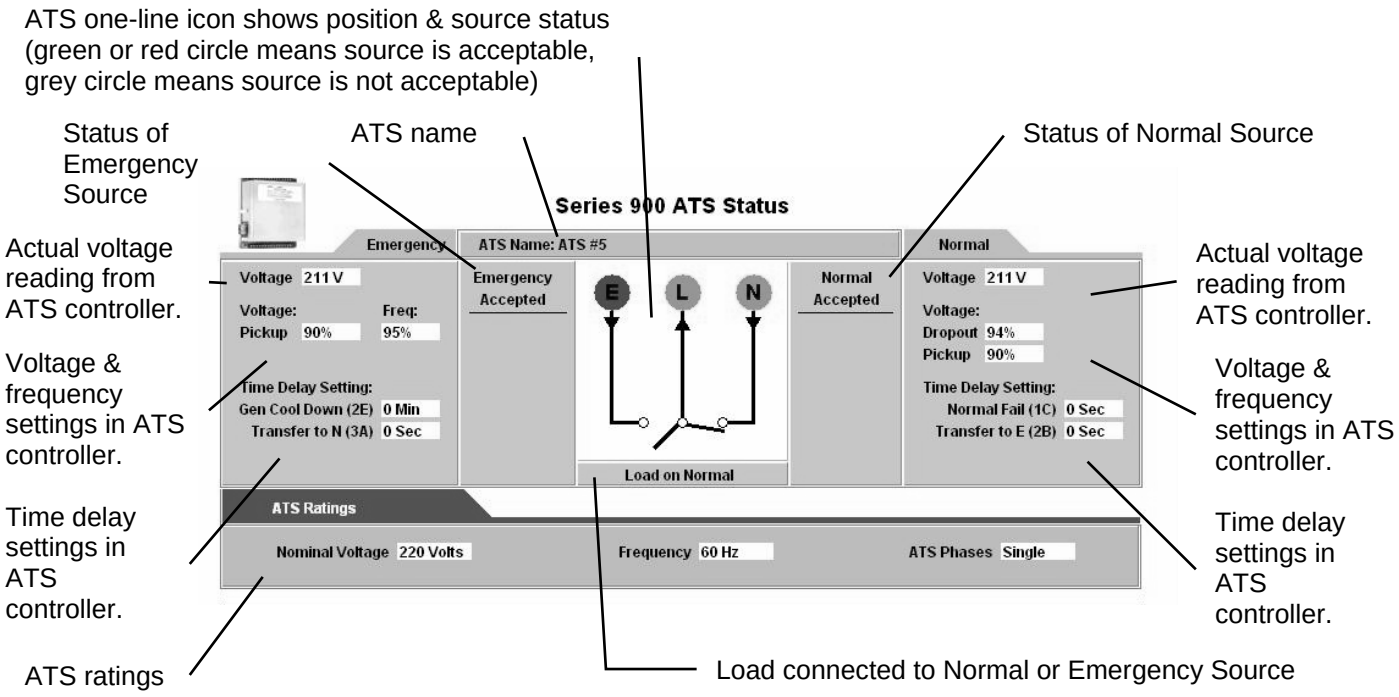
Device Configurator Screen without Power Manager



Device Configurator Screen with Power Manager

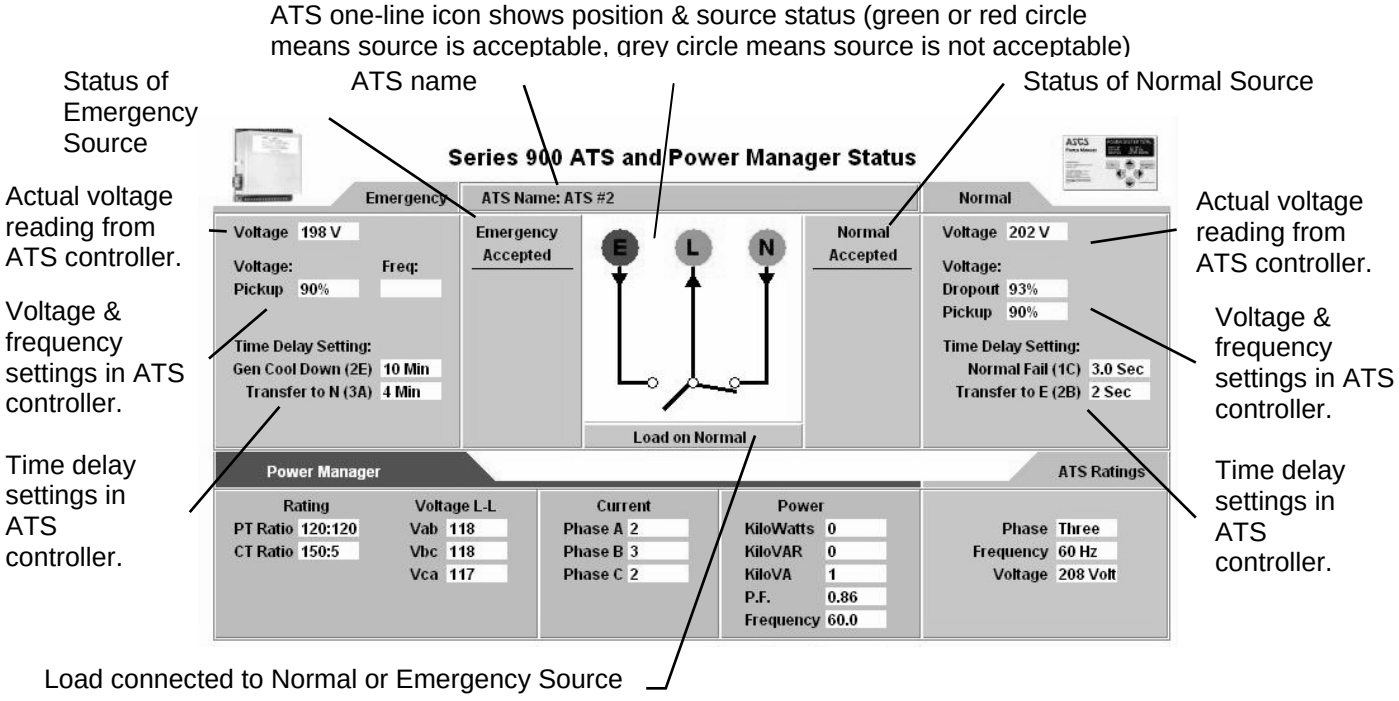
Detail Screen for *ASCO 940/962* ATSs

The **Detail Screen** for *ASCO 940/962* ATSs shows the switch location, ratings, timer settings, actual timer values, pickup and dropout settings, and other status indications.



Detail Screen for *ASCO 940/962* ATSs with a Power Manager

The **Detail Screen** for *ASCO 940/962* ATSs shows the switch location, ratings, timer settings, actual timer values, pickup and dropout settings, and other status indications.



Device Configurator Screen for Power Manager or Digital Power Meter

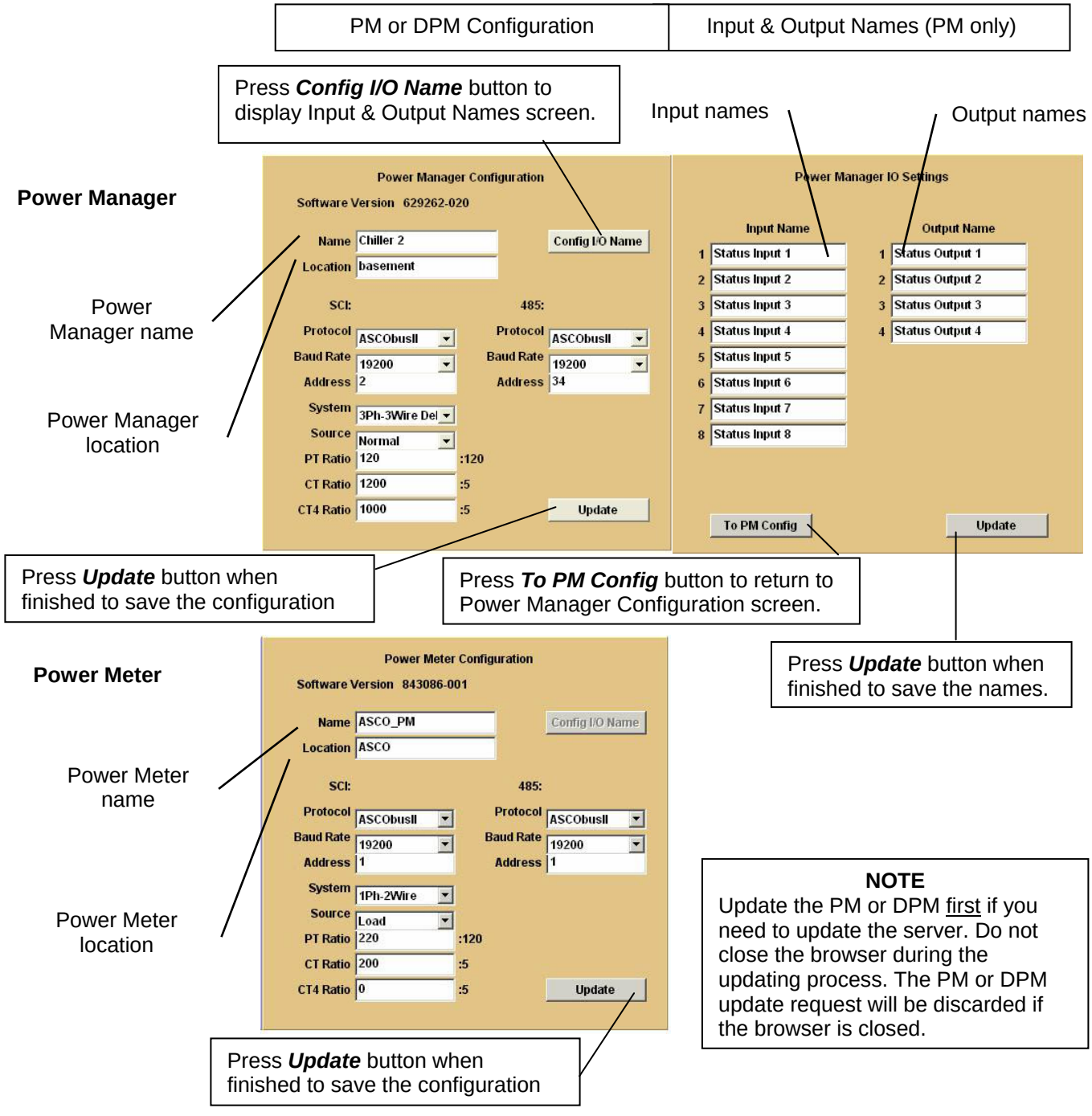
If a stand-alone Power Manager (PM) or Digital Power Meter (DPM) is used, a button appears on the lower left corner of the **Connectivity Module Device Configurator** screen. Press the ***Config PM*** button to display the **Power Manager** or **Power Meter Configuration** screen (right side).

Power Manager or Power Meter Configuration

Enter or change the PM or DPM **Name** (8 char. max.) and **Location** (18 char. max.) Several configuration settings must be set appropriately. Press the ***Update*** button when finished to save the PM or DPM configuration changes.

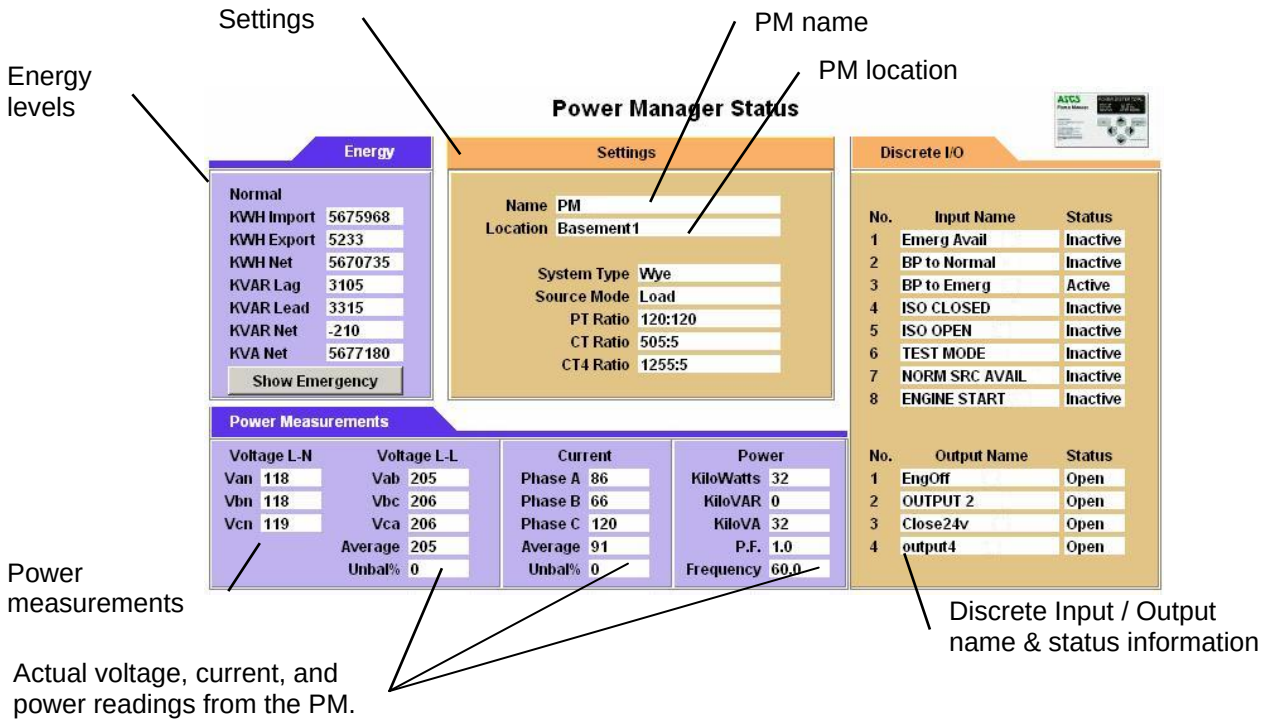
Input Name & Output Names (Power Manager only)

For a Power Manager, press the ***Config I/O Name*** button to display the **Input Name and Output Name** screen. Enter or change the names of the inputs and outputs. Press the ***Update*** button when finished to save theses names.



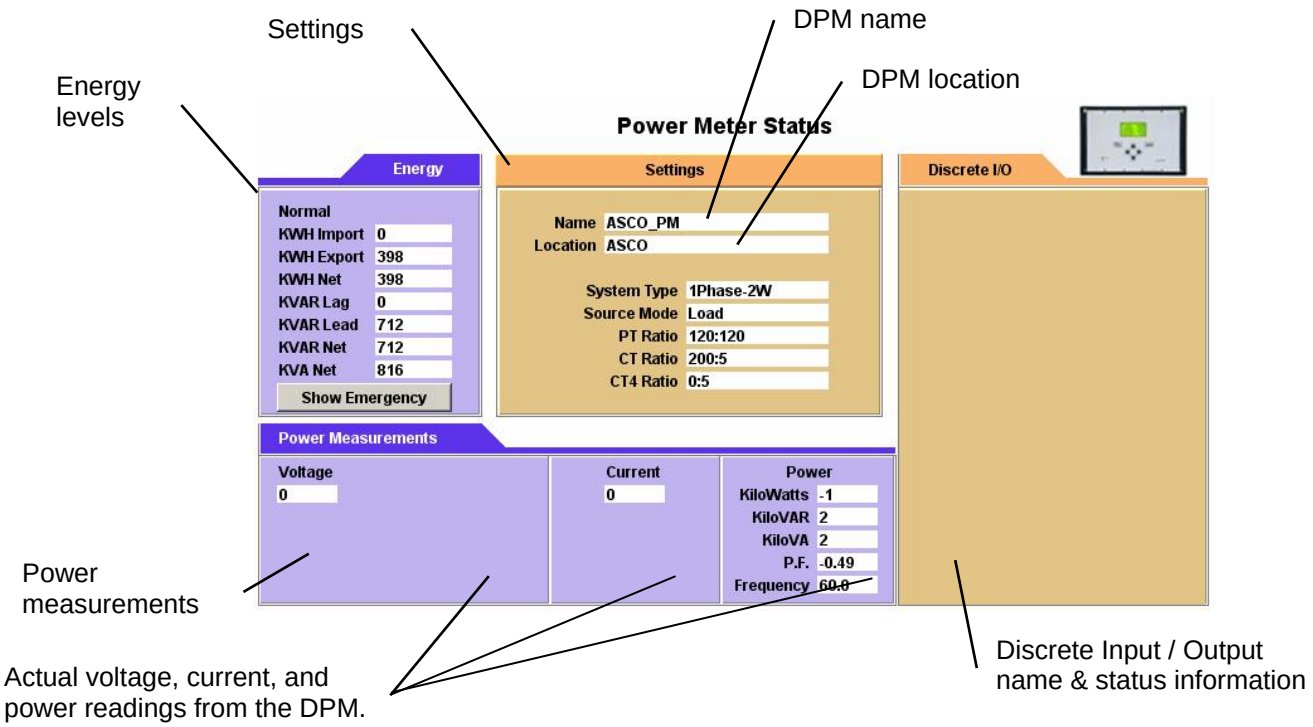
Detail Screen for *Power Managers* connected to a Load

The **Detail Screen** for *Power Managers* shows energy levels, power measurements, settings, discrete I/O status, and other status information.



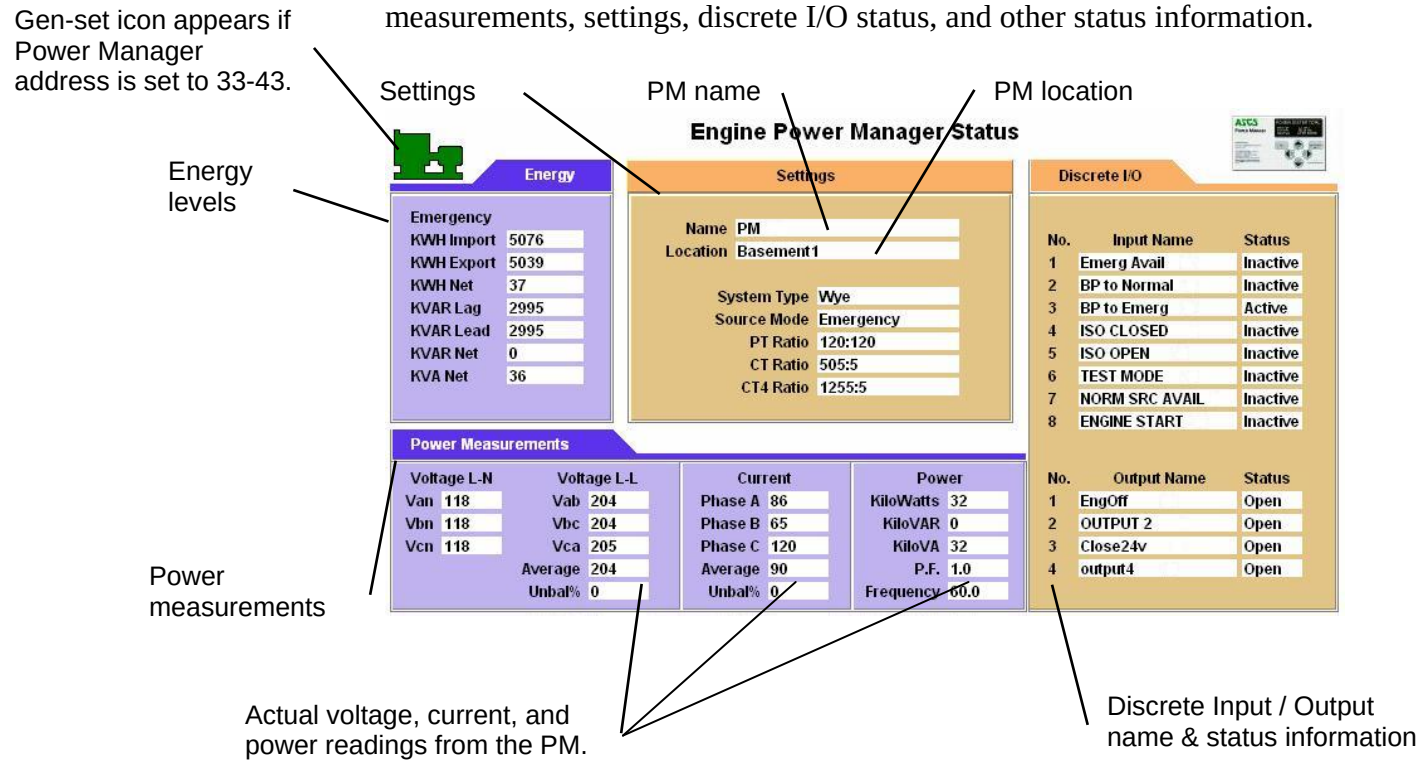
Detail Screen for *Digital Power Meters* connected to a Load

The **Detail Screen** for *Digital Power Meters* shows energy levels, power measurements, settings, discrete I/O status, and other status information.



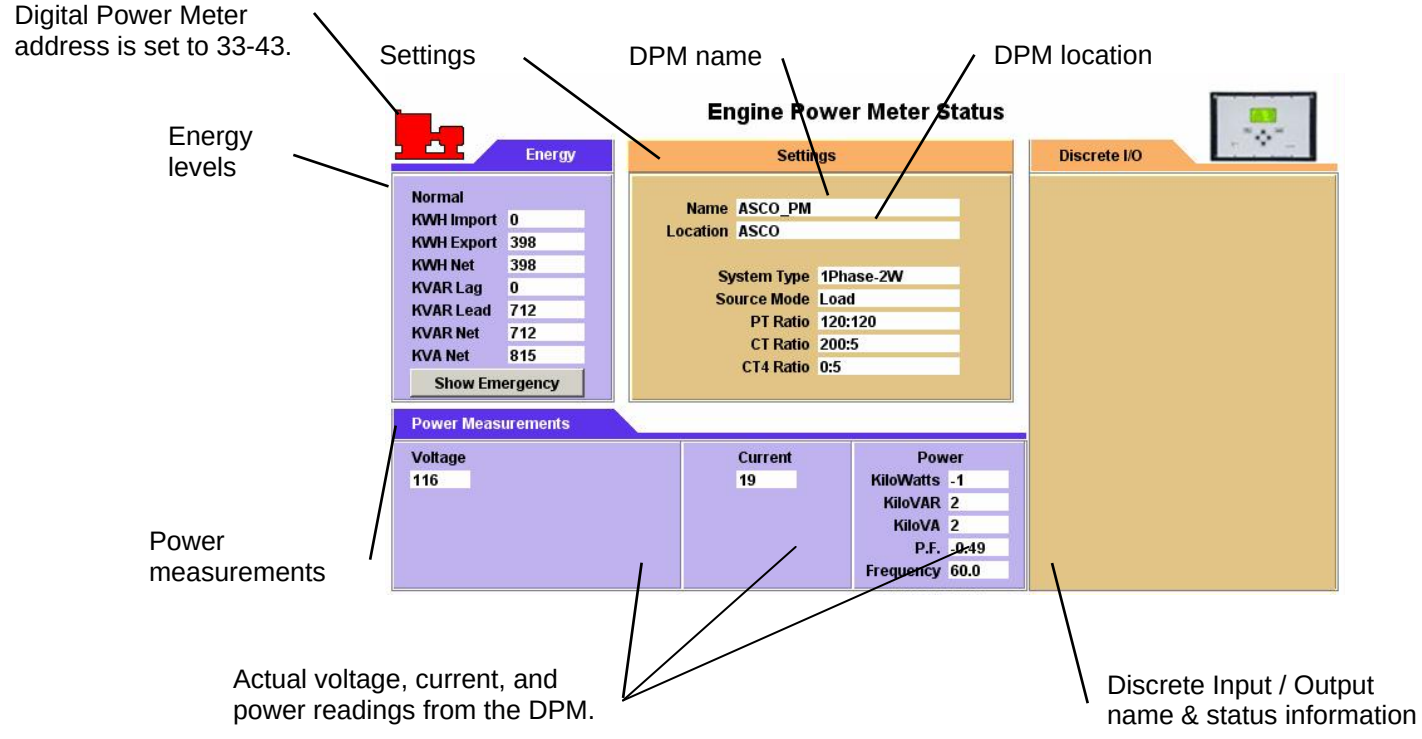
Detail Screen for *Power Managers* connected to a Generator

The **Detail Screen** for *Power Managers* shows energy levels, power measurements, settings, discrete I/O status, and other status information.



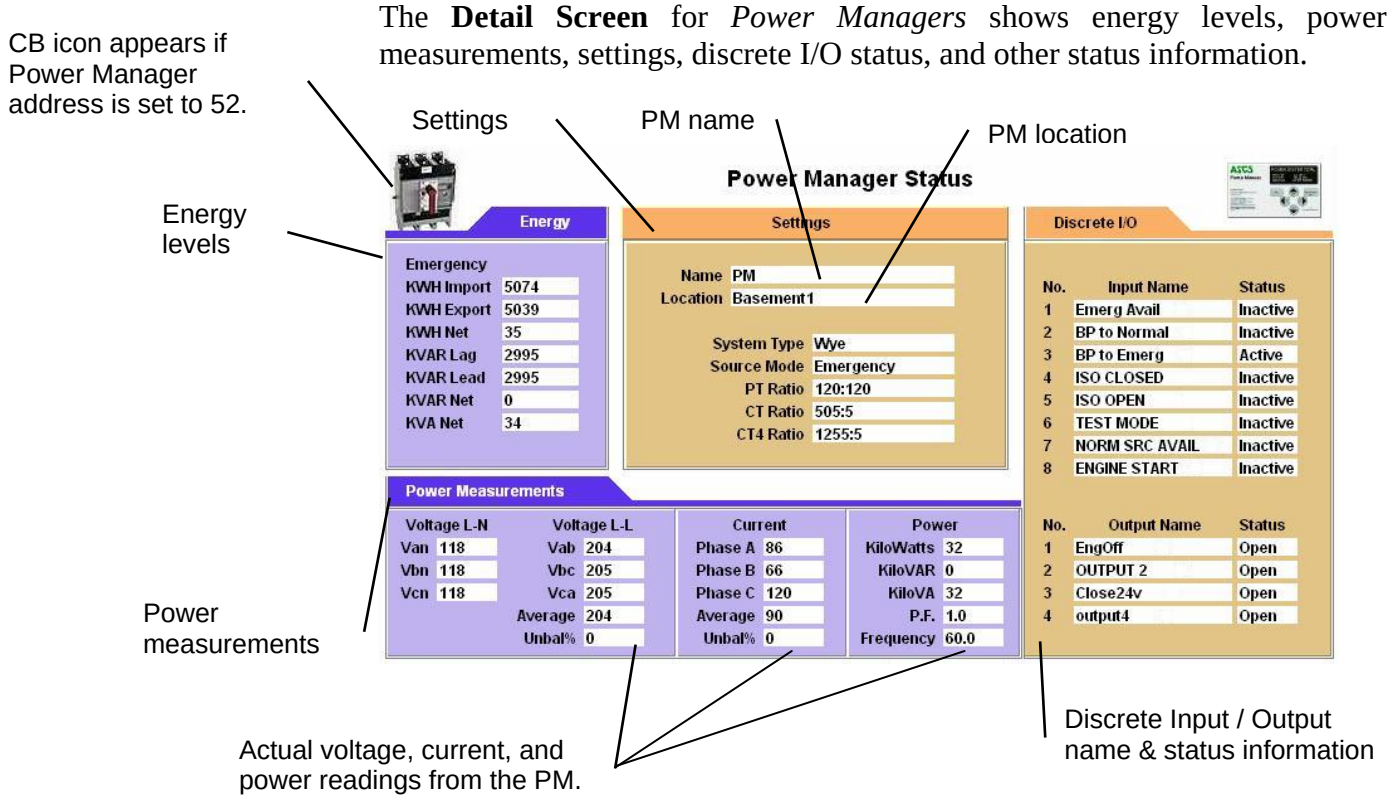
Detail Screen for *Digital Power Meters* connected to a Generator

The **Detail Screen** for *Digital Power Meters* shows energy levels, power measurements, settings, discrete I/O status, and other status information.



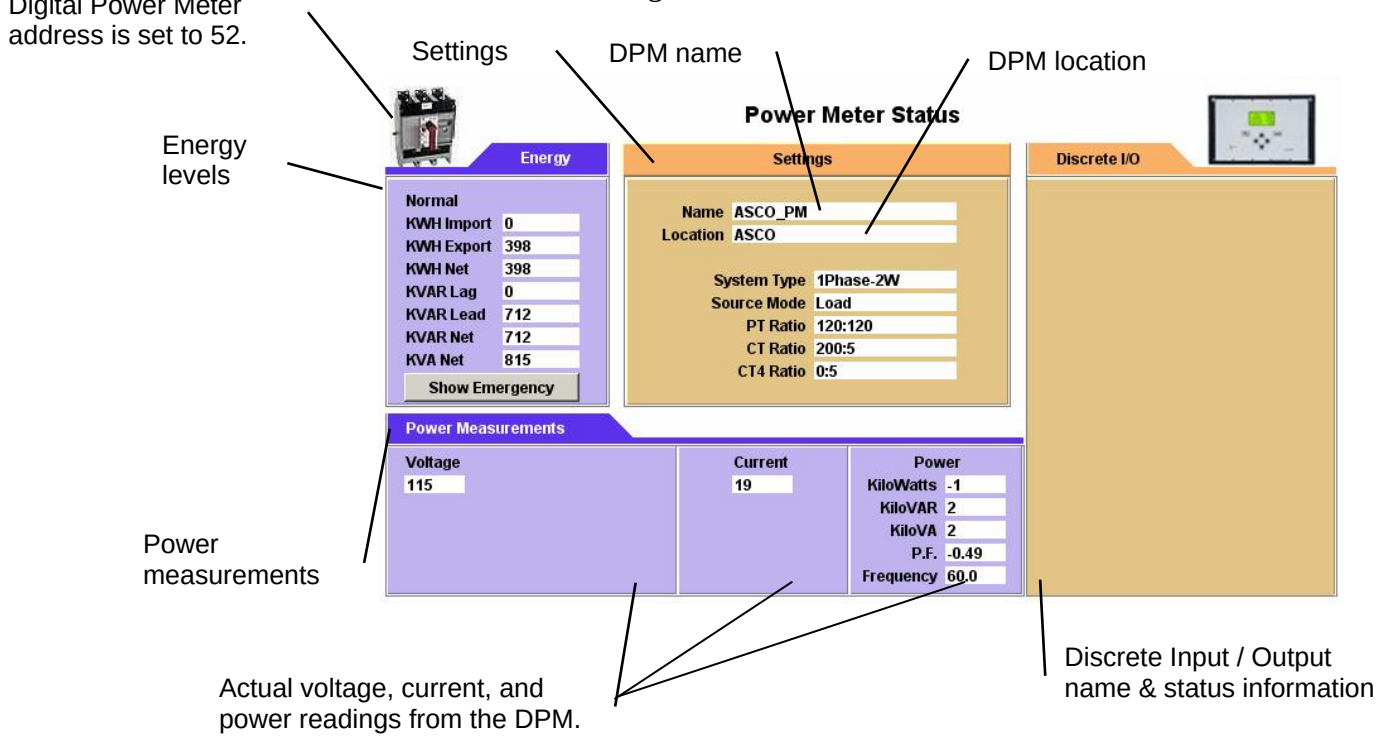
Detail Screen for *Power Managers* connected to a Circuit Breaker

The **Detail Screen** for *Power Managers* shows energy levels, power measurements, settings, discrete I/O status, and other status information.



Detail Screen for *Digital Power Meters* connected to a Circuit Breaker

The **Detail Screen** for *Digital Power Meters* shows energy levels, power measurements, settings, discrete I/O status, and other status information.

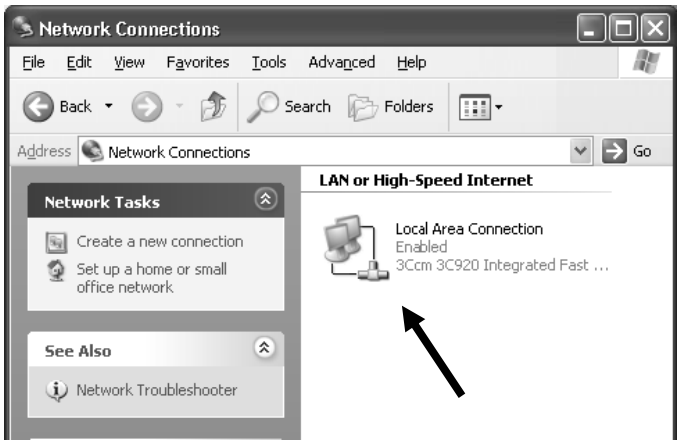


How to Create an Ethernet TCP/IP Network Connection in *Windows XP & 7*

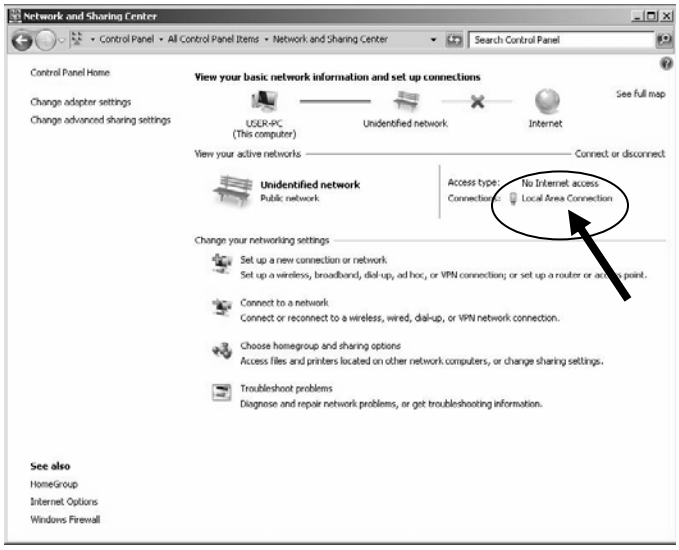
1. Start *Windows*, then click the **Start** button. Select **Control Panel**.

2. Select **Network Connections** (*Windows XP*) or **Network and Internet** and/or **Network and Sharing Center** (*Windows 7*).

3. *Windows XP*)
   Double click **Local Area Connection** to display the properties screen**.**



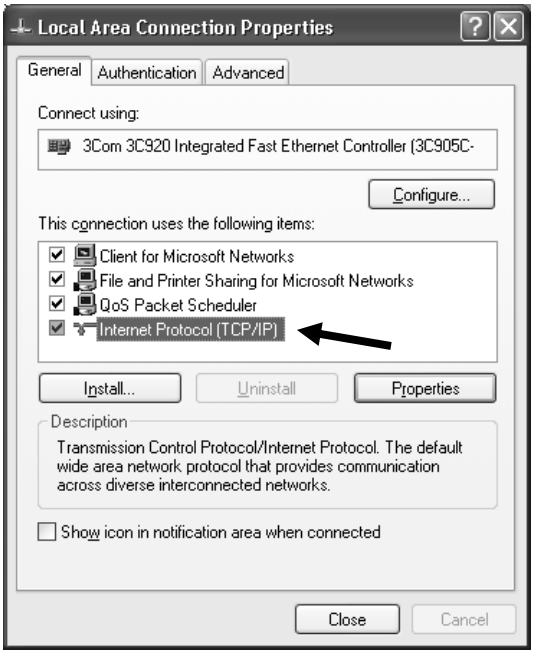
Windows 7
Select **Local Area Connection** then click the **Properties** button.



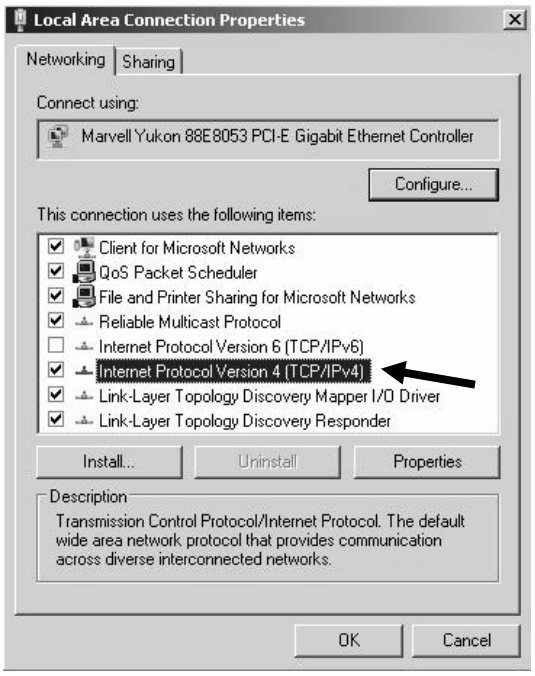
4. On **Local Area Connection Status** screen click the **Properties** button.

5. On **Local Area Connection Properties** screen:

   Windows XP Scroll to verify that
   ☑ *Internet Protocol (TCP/IP)* is selected and highlighted, then click the **Properties** button.



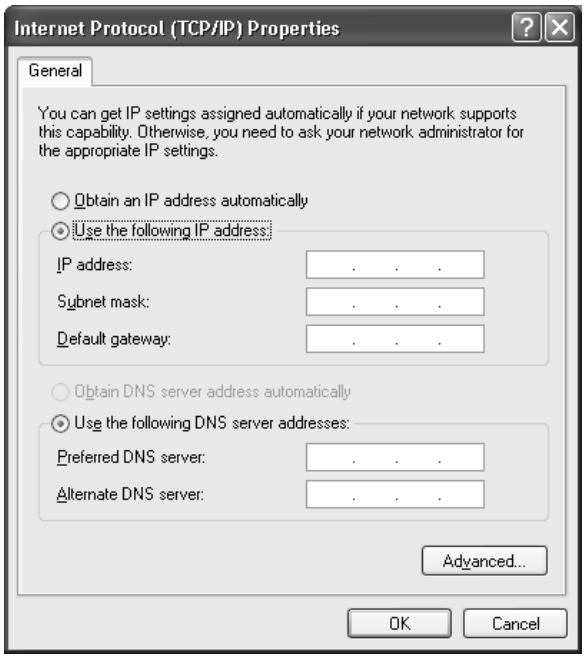
   Windows 7 Scroll to verify that
   ☐ *Internet Protocol Version 6 (TCP/IPv6) is* deselected
   ☑ *Internet Protocol Version 4 (TCP/IPv4)* is selected and highlighted, then click the **Properties** button.



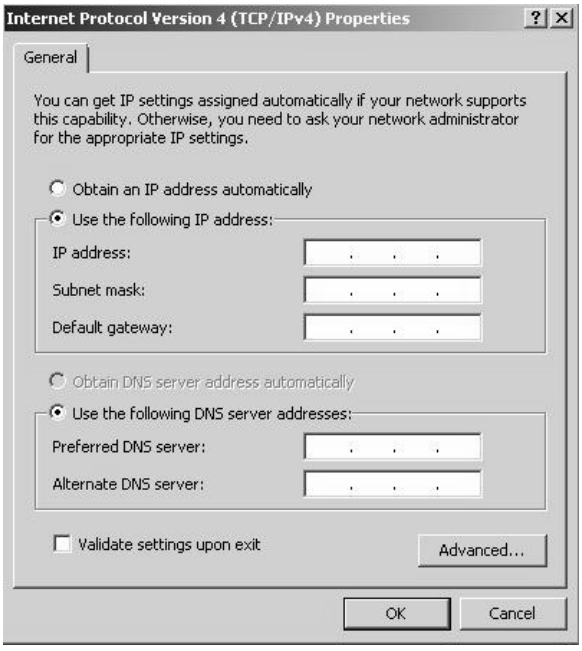
6. If the computer is on the company network contact the facilities IT personnel for appropriate settings.
   If it is a stand-alone computer, enter the IP # for this computer that is listed on the Interface Diagram. For example:

IP address:	169.254.1.2 (last digit must be different than the CM)
Subnet Mask:	255.255.0.0 (same as CM)
Gateway:	0.0.0.0 (same as CM)

   Windows XP



   Windows 7



7. Once the TCP/IP setup is complete at the computer, restart the computer (click the **Start** button, then click **Shut Down**).

8. Restart *Windows*, then click the **Start** button.

   Windows XP
   Select **All Programs** > **Accessories** > **Command Prompt**.

   Windows 7
   In the *Command Prompt* window:
   type cmd and press **ENTER**.

9. In the command prompt window type **ipconfig** and press **ENTER**. The settings are displayed.

10. In the command prompt window type **ping 169.254.1.1** and press **ENTER**. You should see:
    Reply from 169.254.1.1
    This reply confirms communication between the computer and the CM. Close the command prompt window. Proceed to the appropriate section **How to View & Change Configuration Pages from a Connectivity Module**.

Troubleshooting the Connectivity Module

Listed below are possible problems, their causes, possible solutions

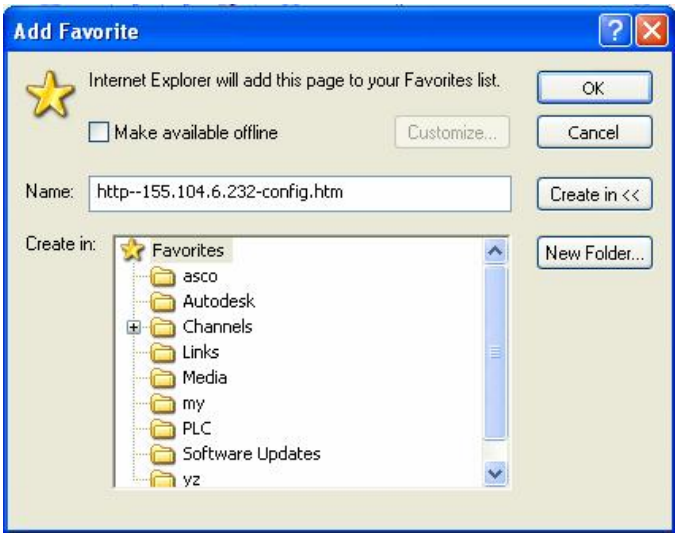
Problem	Cause	Solution
DIAG red light blinks rapidly then stays on when the CM is first powered up.	Duplicate IP address. The IP address of one or more CMs on the same network is set as same.	Unplug the Ethernet cable from all CMs. Follow the instructions from the appropriate configuration section to change to a proper IP address. Reconnect this CM to the network. The red ***DIAG*** light should blink then go off. Repeat this procedure for all other CMs one by one.
DIAG red light blinks slowly or stays on after the CM is properly configured.	Major software or communication failure.	Press ***Reset*** button on CM. If condition still exists, call your local ASI representative.
Message: *Page not found.*	Wrong or improper IP address and subnet. Problem with connections between CM, ATS Controller, PM, and/or DPM. Wrong configuration.	Try to refresh the page again. If you get the same results, verify the IP address and wiring by pinging the device.
Message: *No controller or power manager has been found.*	Problem with connections between CM Module, ATS Controller, PM, and/or DPM.	Check wiring then press ***Reset*** button on CM.
Message: *72E baud rate and at least another device baud rate are mismatched* (or similar message).	Baud rates of CM, ATS Controller, PM, and/or DPM are different.	If 7000 or 4000 Series ATS, set baud rate of all the devices to 19200. If Series 300 or ASCO 940/962, set baud rate of all the devices to 9600.
Message: *Communication error* stays on. (***RX*** light is blinking & ***TX*** light is off).	Lost connections.	Check connections
Message: Communication error comes on then goes off by itself.	Busy network or lost connections	Increase reply time out.
LINK light is off	Invalid network	Check if it is a proper IP address. Check the Ethernet cable and connections.
4-wire / 2-wire Modbus communication problem	- ATS or PM are not configured for Modbus protocol - ATS or PM are not configured with the same baud rate as the CM - ATS or PM are configured with the same serial address - For 4-wire communication, ATS was not configured for 4-wire mode - For 2-wire communication, ATS was not configured for 2-wire mode - For 2-wire communication, CM 2-wire DIP switch was not enabled - For 2-wire communication, 2-wire mode was not enabled at the CM configuration page - Modbus master is not requesting the correct set of holding registers - Modbus master requesting more holding registers than the CM can handle - Modbus master reply timeout may be too short - Modbus master using incorrect CM IP address or TCP port	- Make sure ATS and PM are configured with: Modbus protocol the same baud rate as CM the correct serial I/F setting (4-wire/2-wire) unique serial addresss - For 2-wire communication, make sure to configure the CM serial I/F setting for 2-wire mode at the configuration page; and to enable its 2-wire DIP switch - Modbus master should refer to doc. 381339-221 for the ATS and PM holding registers. - Modbus master must use appropriate relay timeout (usually starting with 1000 ms) and to consider using retries (3 recommended) before calling for communication error. - Modbus master must request a maximum of 12 holding registers from the ATS controller & 24 from the PM - Modbus master connect to the same IP address and TCP port assigned to CM - Check serial wiring connection between ATS/PM and the CM
Intermittent loss of communication / connection	CM disconnects the client because client was inactive / idle (stops sending requests longer than 10 seconds)	When client connects to the CM, it should never stop communicating (sending request) at all times. When CM detects inactivity from the connected client (from its last request) longer than 10 seconds, the CM will automatically disconnect it. That client must then reconnect to resume communication.
AES enable client getting incorrect response or no response from the CM.	Incorrect CM configuration settings: - AES is not enabled - Incorrect AES port	Provide correct CM AES configuration settings

ATS = automatic transfer switch, CM = Connectivity Module, DPM = Digital Power Meter, PM = Power Manager

How to create a *Favorites* folder for ASCO device pages and copy it to another computer

To create a *favorites* folder and copy it to another user's computer, the administrator should follow these steps:

1. Open the first page and then pull down the *Favorites* manual and select *Add to Favorites* … This window will appear:



2. Click the *New Folder* button, type the new folder name as **asco**, then click the *OK* button.

3. Click folder **asco** and click *OK*.

4. Open the other pages one by one and click *Add to Favorite*, click folder **asco**, then click OK.

5. Once the administrator is done with saving all the pages, the following steps describe how to copy the **asco** folder from the administrator's computer to another user's computer.

a. For *Windows XP*, find the **asco** folder from directory 'c:documentd and settings\'user name'\favorites'.

b. Copy the **asco** folder into the corresponding path above.

c. Open browser and select address or name from favorite **asco** folder to view the device pages.

Third Party Modbus Device Configuration

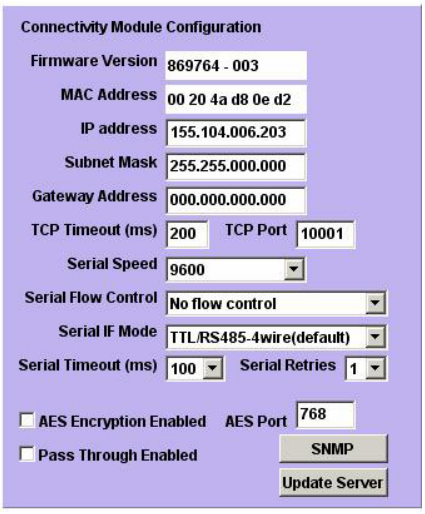
The Connectivity Module supports the Modbus devices with Modbus/TCP portocol. The transmit and receiving data format are as follows:

Read:
Requests:
Bytes 0, 1 Transaction ID.
Usually zero when making a request, the server will copy them into the response.
Bytes 2, 3 Protocol number. It must be zero.
Byte 4 length (high byte) its always zero.
Byte 5 length (low byte) of the following total bytes
Byte 6 device address
Byte 7 function code
Bytes 8, 9 Modbus address of the starting transfer.
Bytes 10, 11 number of word to transfer
Response:
Bytes 0, 1 Transaction ID. Its faithfully copied from the request
Bytes 2, 3 Protocol number. It always is zero.
Byte 4 length (high byte) its always zero
Byte 5 length (low byte) of the following total bytes
Byte 6 device address
Byte 7 function code
Bytes 8 byte count of Modbus data.
Bytes rest data values

Configure the Connectivity Module to properly communicate with the other devices. The following items should be ready before you start to configure it:

1. Ethernet crossover cable.
2. Laptop with proper Ethernet connect ability.
3. Start Internet browser and type 'IP address\config.htm' on the browser address field.
4. This page should appear:

From this page, configure all the parameters except reply timeout which needs to configured from client device.



How to set SNMP (Simple Network Management Protocol) Configuration

Firmware 869764-003 and higher provides SNMP configuration.

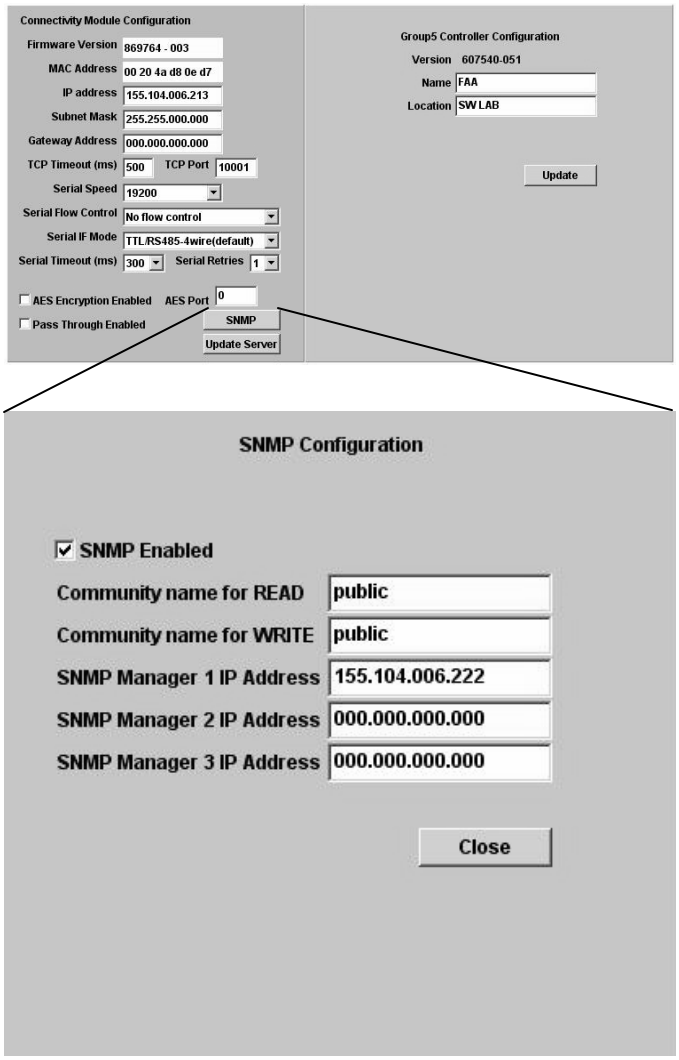
1. On the **Device Configuration** screen (page 2-1 or 3-1) click the **SNMP** button at the bottom.
2. On the **SNMP Configuration** screen click the check box ☑ **SNMP Enabled** (to enable it).
3. Assign the **Community name for READ** and **Community name for WRITE.**
4. Assign the **SNMP Manager IP Addresses.** Start with the 1 IP address and be sure the addresses have 4 octets where each octet has 3 digits in it. Click the **Close** button. xxx.xxx.xxx.xxx
5. Review all settings, then click ***Update Server*** button to save the configuration settings.

SNMP TRAP messages

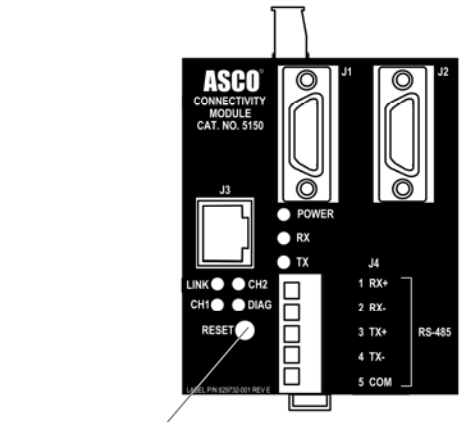
With SNMP enabled the CM can notify changes on ATS status and power metering conditions by sending TRAP messages. The changes listed below are regarded as alarms and are strictly monitored during runtime.

1. ATS transfer to emergency source
2. ATS retransfer to normal source
3. Engine running
4. Normal source unavailable
5. Emergency source unavailable
6. Power manager digital inputs 1 to 8 activation.
7. Power manager digital outputs 1 to 4 activation

Device Configuration Screen (see page 2-1 or 3-1)



SNMP Configuration Screen



RESET button

RESET button on CM

Recommended ASCO SNMP MIB file

A file containing 934904-xxx.mib can be downloaded from the location shown below.

http://www.emersonnetworkpower.com/
en-US/Products/PowerSwitchingandControls/MonitoringandControl/Pages/
ASCO5150ConnectivityModuleAcc72E.aspx

The 934904-xxx.mib file is written in the MIB module definition language based on the SMI specifications. This protocol file contains a structure block of information pertaining to ATS status and analog data. When SNMP is enabled, the CM polls for the information and shares it with requesting SNMP manager(s). The SNMP manager must use the file as a reference in sending SNMP requests for ATS information.

Troubleshooting SNMP Configuration

Problem	Cause	Solution
SNMP Manager cannot communicate with the Connectivity Module; do not get trap message after alarms occur.	- Host running SNMP Manager is not in the same network or Connectivity Module - SNMP is not enabled. - Incorrect SNMP IP Manager IP addresses - Incorrect SNMP community setting.	- Check SNMP configuration at Connectivity Module configuration page. - Hook up a laptop to the same network and ping the Connectivity Module and SNMP Manager(s).

Communication Address Form for Connectivity Module (CM)

Row No.	IP Address	Subnet mask	Gateway	ATS Serial No.	ATS Catalog No.	Address set in ATS Controller*	Address set in PM or DPM**

Instructions: Fill in the information for each Connectivity Module (CM) with an ATS, Power Manager (PM), and/or Digital Power Meter (DPM).

* For Group 5 Controller (*7000 & 4000 Series*) refer to **User's Guide 381333-126**

* For Group 1 Controller (*Series 300*) refer to Communication Interface Module **Instructions 381339-189**

* For Group 7A Control Panel (*ASCO 940, 962, 436, 434, 447, 448*) refer to Accessory 72A **Instructions 381339-172**

** For Power Manager refer to **Operator's Manual 381333-199**. For Digital Power Meter refer to **Operator's Manual 381333-368**.

For Serial Module Catalog 5110 (Accessory 72A) refer to **Installation Manual 381333-240**.

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